

Zaxcom Digital Wireless System User's Manual



TRX900



TRX900AA



TRX800



TRX700



TRX992



RX900 (M/S)



IFB100



RX4900

Receiver Firmware Version: **8.83**
Transmitter Firmware Version: **6.08 & 6.08T**

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Table of Contents

CHAPTER 1 – TOPICS THAT APPLY TO MOST UNITS IN THE SYSTEM.....	9
TRANSCEIVERS (TXS WITH IFB, TIMECODE AND REMOTE CONTROL CAPABLE RECEIVERS)	9
<i>What's included with the TRX900 (/AA)</i>	9
Options.....	9
<i>What's included with the TRX992</i>	9
Options.....	9
TRANSMITTERS ONLY.....	9
<i>What's included with the TRX700</i>	9
Options.....	9
<i>What's included with the TRX800</i>	9
Options.....	9
RECEIVERS	10
<i>What's included with the RX900 (M/S)</i>	10
Options.....	10
<i>What's included with the RX4900</i>	10
Options.....	10
IFB/REMOTE CONTROL UNIT.....	10
<i>What's included with the IFB100</i>	10
Options.....	10
USER MANUAL CONVENTIONS.....	10
SYSTEM FEATURES	11
MENU SYSTEM	12
MEDIA.....	12
MICROPHONES.....	13
<i>Compatible Lavs</i>	13
<i>Compatible Stick Mics</i>	13
<i>General</i>	13
BATTERY INSTALLATION.....	14
BATTERY LIFE.....	14
EXTERNAL POWER.....	14
OPERATING FREQUENCIES.....	14
<i>Audio</i>	14
<i>Remote Control, Timecode and IFB Feed</i>	14
ANTENNA CABLE SELECTION	14
CHAPTER 2 – DIGITAL WIRELESS SYSTEM TRANSMITTERS.....	15
GETTING TO KNOW YOUR TRX900 (/AA) BODYPACK TRANSMITTER	15
<i>Device Interface</i>	15
Media Slot	15
Transmitter Antenna	15
Unit Power Switch – Internal/External Power Switch	15
IFB Antenna.....	16
<i>TRX900 (/AA) Configuration Menus</i>	16
GETTING TO KNOW YOUR TRX992 WIRELESS BOOM TRANSMITTER	17
<i>Device Interface</i>	18
Mix Ratio.....	18
Headphone Fader	18
Media Slot	18
Transmitter Antenna	18
Unit Power Switch	18
IFB Antennas.....	18
Battery Slot.....	18
Phantom Power Switch & Mic/Line Switch	18
<i>TRX992 Configuration Menus</i>	19
GETTING TO KNOW YOUR TRX700 PLUG-ON TRANSMITTER.....	20
<i>Device Interface</i>	20
Antenna	20
Phantom Power switch.....	20

Zaxcom Digital Wireless System User's Manual

Media Slot	20
TRX700 Configuration Menus.....	21
GETTING TO KNOW YOUR TRX800 HANDHELD WIRELESS TRANSMITTER	22
Device Interface	23
Antenna	23
Media Slot	23
Unit Power Switch	23
Record Key.....	23
TRX800 Configuration Menus.....	23
COMMON TRANSMITTER STANDARD MENU.....	24
Normal Startup Sequence (without any card inserted)	24
Normal Startup Sequence (with a formatted card inserted)	25
Pacifier page.....	26
Audio Gain page	27
Audio Transmitter Frequency page.....	27
Transport Control page	28
Timecode Frame-rate page.....	28
Earpiece Source page	28
Lock page.....	29
Unlocking the transmitter	29
COMMON TRANSMITTER EXTENDED MENU.....	29
Extended Startup Sequence (without any card inserted)	29
Extended Startup Sequence (with a formatted card inserted).....	30
Entering the Extended Menu	30
Exiting the Extended Menu.....	30
Highpass Filter page.....	30
Limiter page	30
Audio Transmission Format page.....	31
IFB Format page	31
IFB Enable page.....	31
IFB Voting Enable page.....	32
IFB Frequency page.....	32
Power-up Mode page.....	32
Unlocking the transmitter	32
Media Erase & Format page.....	32
To Format a Card:	33
To Recreate the Wrapper Files (will not destroy existing audio takes):.....	33
Timecode Jam Mode page	33
Timecode Source page	33
Timecode Output Enable page.....	34
Remote Control Group ID page.....	34
Remote Control Unit ID page.....	34
Expander page.....	34
Dynamics page.....	35
ADC Location page	36
Battery Type page.....	36
Recording Mode page.....	36
Audio Transmitter Power page.....	36
Boot Up Mode page.....	37
Mute Switch Enable page.....	37
Left/Right Key Assignment page.....	37
Track Name page.....	37
Security Code page.....	38
COMMON TRANSMITTER INDEPENDENT OPERATIONS.....	38
Display a Detailed Startup Sequence	38
Detailed Startup Sequence (without any card inserted).....	38
Detailed Startup Sequence (with a formatted card inserted)	39

CHAPTER 3 – RECORDING AUDIO USING THE DIGITAL WIRELESS SYSTEM TRANSMITTERS 40

RECORDING FORMAT.....	40
-----------------------	----

RECORDING MODE	40
BATTERY LIFE.....	40
MEDIA CAPACITY.....	40
DUAL COLOR LED.....	41
TRANSMITTER RECORDING OPERATION.....	41
<i>Formatting the MiniSD Card</i>	41
<i>Current Timecode and Frame-rate Display</i>	41
<i>Jamming Timecode into the Transmitter</i>	41
Manually Jamming TC with a Cable	42
Continuously Jamming TC using the IFB100.....	42
Automatically Starting and Stopping the Recording using Timecode from the IFB100	42
CHAPTER 4 – TRX900 (/AA) ADAPTERS.....	43
STAI00 STEREO ADAPTER.....	43
<i>Installation</i>	43
<i>Adjusting the Input Level</i>	43
<i>Powering the STAxXX</i>	44
Using an External Power Source.....	44
Using the STAxXX to Power the Transmitter	44
<i>The Audio/Timecode Output Connection</i>	44
Timecode Input.....	44
Operation of the STAxXX	44
Host Unit functions.....	44
STAI50 STEREO ADAPTER.....	45
EAI00 EARPICEE ADAPTER	45
TCA100 TIMECODE ADAPTER	46
MSAI00 MUTE SWITCH.....	46
CHAPTER 5 – DIGITAL WIRELESS SYSTEM RECEIVERS.....	47
GETTING TO KNOW YOUR RX900 (M/S) ENG DIVERSITY RECEIVER.....	47
<i>Powering the Receiver</i>	47
Internal Batteries	47
External Power Source	47
<i>Connections</i>	47
Audio Output Connector	48
Antenna Connectors	48
<i>RX900 (M/S) Configuration Menus</i>	48
GETTING TO KNOW YOUR RX4900 DIVERSITY RECEIVER.....	49
<i>Powering the Receiver</i>	50
<i>Connections</i>	50
Audio Output Connector	50
Antenna Connectors	50
RS-485 Connectors.....	50
<i>RX4900 Configuration Menus</i>	51
COMMON RECEIVER STANDARD MENU	52
<i>Pacifier page</i>	52
<i>Audio Receiver Frequency Select page</i>	52
<i>Audio Receiver Frequency Scan page</i>	53
Best Practice: Scanning for a Low Noise Frequency	53
Best Practice: Finding the Quietest Frequencies for Multiple Transmitters.....	53
<i>Test Tone page</i>	54
COMMON RECEIVER EXTENDED MENU.....	54
<i>Entering Extended Menu</i>	54
<i>Exiting the Extended Menu</i>	54
<i>Backlight On/Off page</i>	54
<i>Power Saver Enable page</i>	54
<i>Audio Reception Format page</i>	54
<i>Security Code Part 0 page</i>	55
<i>Security Code Part 1 page</i>	55
<i>RS-485 Unit ID page</i>	56
<i>RS-485 Communication Speed page</i>	56

Zaxcom Digital Wireless System User's Manual

Left/Right Switch page.....	56
Preset Frequency pages (# = 0 to 9).....	56
COMMON RECEIVER TEST MENU	57
Entering the Test Menu	57
Exiting the Test Menu.....	57
Security Enable page.....	57
Antenna Signal Strength page.....	57
VCO page.....	57
Reception Error Counters page.....	57
Signal Reception Quality page.....	57
CHAPTER 6 – IFB100 IFB TRANSMITTER	58
GETTING TO KNOW YOUR IFB TRANSMITTER.....	58
SETTING UP THE IFB100.....	59
Power Requirements.....	59
Audio Input	59
Adjusting the Input Audio Level	59
Timecode.....	59
IFB100 Configuration Menus	59
IFB100 STANDARD MENU.....	60
Pacifier page.....	60
Remotely Starting and Stopping the Transmitter Recorder.....	60
Remote Audio Gain Change page.....	60
Remote Unit ID page.....	60
Remote Audio Frequency Change page	61
Remote Power Setting Change page.....	61
Timecode Frame-rate page.....	61
IFB Frequency page.....	62
Selecting the frequency.....	62
IFB Input Mix page	62
Lock page.....	62
Unlocking the transmitter	62
IFB100 EXTENDED MENU	62
Entering the Extended Menu	63
Exiting the Extended Menu.....	63
Highpass Filter page.....	63
Limiter page	63
IFB Format page	63
IFB Frequency page.....	63
Power-up Mode page.....	64
Unlocking the IFB100	64
Timecode Jam Mode page	64
Timecode Source page	64
Timecode Output Enable page.....	64
Remote Control Group ID page.....	65
Remote Control Unit ID page.....	65
IFB Transmitter Power page	65
TV Channel Minimum page.....	65
TV Channel Maximum page.....	65
IFB100 INDEPENDENT OPERATIONS	66
Display a Detailed Startup Sequence	66
Detailed Startup Sequence (without any card inserted).....	66
Detailed Startup Sequence (with a formatted card inserted)	66
CHAPTER 7 – ZEDALPHA DIGITAL WIRELESS MONITORING SOFTWARE.....	67
CHAPTER 8 – ZAXCONVERT UTILITY	68
ABOUT ZAXCONVERT.....	68
USING ZAXCONVERT	68

OUTPUT FILE TYPE.....	68
TIMECODE.....	69
SAMPLE-RATE CONVERSION	69
MAXIMUM FILE SIZE	69
OUTPUT FILE NAME	69
TRACK ENABLE.....	69
CHAPTER 9 – EQUIPMENT SPECIFICATIONS	70
TRX900 (/AA) SPECIFICATIONS	70
TRX992 SPECIFICATIONS.....	71
TRX700 SPECIFICATIONS.....	72
TRX800 SPECIFICATIONS.....	73
RX900 (M/S) SPECIFICATIONS	74
RX4900 SPECIFICATIONS	74
IFB100 SPECIFICATIONS.....	75
CHAPTER 10 – WIRING DIAGRAMS	76
TRX900 (/AA) MICROPHONE CABLES (AFTER SERIAL # 1314)	76
TRX900 (/AA) MICROPHONE CABLES (BEFORE SERIAL # 1315)	77
STAXXX AND IFB100 CABLES	78
TRX700 JAM SYNC CABLE.....	78
CHAPTER 11 – FIRMWARE INFORMATION.....	79
FIRMWARE.....	79
<i>Advantages to Upgrading the Firmware</i>	<i>79</i>
<i>Upgrading the firmware in each unit.....</i>	<i>79</i>
SIGNIFICANT CHANGE REMINDERS.....	80
<i>Using Remote Control and Timecode while in HQ Mode (2009-06-03) TX Version 6.08+</i>	<i>80</i>
<i>Using High Capacity SD Cards (2009-03-03) TX Version 5.98+</i>	<i>80</i>
<i>New IFB High Quality Mode in TRX992 (2009-01-29) TX Version 5.92T+ IFB Version 5.92+</i>	<i>80</i>
<i>New Receiver LCD module (2008-12-04) RX x80+.....</i>	<i>80</i>
<i>Independent TRX992 Firmware version (2008-11-29) TX Version 5.70T+.....</i>	<i>80</i>
<i>Left/Right Switch Mode (2008-11-24) TX Version 5.68+ RX Version x83 or x78+.....</i>	<i>80</i>
<i>New IFB Audio Codec (2008-05-21) TX & IFB Version 5.50a+</i>	<i>80</i>
KNOW FIRMWARE PROBLEMS.....	80
TRX / ZFR / IFB FIRMWARE HISTORY.....	81
RX SOFTWARE HISTORY	85
CHAPTER 12 – MENU SHEETS.....	88
MENU SHEET FOR TRX9XX	88
MENU SHEET FOR TRX700 / TRX800.....	92
MENU SHEET FOR RX900 (M/S) & RX4900	95
MENU SHEET FOR IFB100	97
CHAPTER 13 – DIGITAL WIRELESS SYSTEM QUICKSTART	99
COMMON SETTINGS FOR ASSOCIATED TRANSMITTERS, RECEIVERS AND IFB.....	99
USING YOUR WIRELESS TRANSMITTERS AND RECEIVERS.....	99
<i>Receiver Related Preparation.....</i>	<i>99</i>
Scan for an Open Frequency.....	99
Set the Signal Format.....	100
Enter the Encryption Code.....	100
<i>Transmitter Related Preparation</i>	<i>100</i>
Power Switch	100
Enter the Audio Transmitter Frequency.....	100
Set the Signal Format (TRX900 w/ STAxXX)	101
Set Where Analog to Digital Conversion is to be Performed	101
Set the Transmit Power (May 2008 and later models)	101
Enter the Encryption Code.....	101
REMOTELY CONTROLLING THE TRANSMITTERS AND SENDING IFB AUDIO	102
<i>IFB100 Related Preparation</i>	<i>102</i>

Enter the IFB Frequency for Your Group	102
Identify the Audio Source(s) for the IFB transmitter	102
Enter a Unique Group ID for Your Gear	102
Send Timecode from the TC Source to each Transmitter	102
Set the IFB Format for Your Group	102
Cycle the IFB100's Power	102
TRX9xx Related Preparations	103
Set the IFB Format	103
Enable the IFB Receiver	103
Enter Your Gear's Group ID	103
Assign a Unique Unit ID	103
Enter Your Group's IFB Frequency	103
Enter the IFB Earpiece Source (Optional)	103
Cycle the Power of Your Transmitter	103

CHAPTER 14 – ZAXCOM WARRANTY POLICY AND LIMITATIONS..... 104

Table of Figures

Figure 1-1 TRX900 Front View	12
Figure 2-1 TRX900 Front and Top Views	15
Figure 2-2 TRX992 Front, Top, Bottom, Back & Battery Views	17
Figure 2-3 Internal Switches Location	18
Figure 2-4 TRX700 Front & Top End Views	20
Figure 2-5 TRX800 Side, Mic Capsule, Body Threaded End, Body Antenna End & Barrel Views	22
Figure 4-1 STA100 Front & Back Views	43
Figure 4-2 STA100 attached to TRX900AA	44
Figure 4-3 STA150 & STA150 attached to TRX900AA	45
Figure 4-4 EA100 & EA100 attached to TRX900	45
Figure 4-5 TCA100 attached to TRX900AA & TCA100	46
Figure 4-6 MSA100 Mute Switch Adapter attached to TRX900AA & MSA100 Mute Switch Adapter	46
Figure 5-1 RX900 (M/S) Front & RX900 (S) Rear Views	47
Figure 5-2 RX4900 Front, Rear, Receiver & Monitor Controls Views	49
Figure 5-3 RX4900 Interior – Mic/Line output level switches	49
Figure 6-1 IFB100 Front & Side Views	58
Figure 7-1 ZedAlpha screen	67
Figure 8-1 ZaxConvert Windows & Mac Main screens	68
Figure 8-2 Choose Output File Type screen	68
Figure 8-3 Timecode Options screen	69
Figure 8-4 Output Sample Rate Conversion screen	69
Figure 8-5 Maximum Output File Size screen	69
Figure 10-1 Two-wire microphone configuration (current transmitters)	76
Figure 10-2 Three-wire microphone configuration (current transmitters)	76
Figure 10-3 Balanced Line to TRX900 (/AA)	76
Figure 10-4 Two-wire microphone configuration (previous transmitters)	77
Figure 10-5 Three-wire microphone configuration (previous transmitters)	77
Figure 10-6 Balanced Line to TRX900 (/AA)	77
Figure 10-7 Standard XLR-3F to TA-5F Line-level input cable	78
Figure 10-8 LEMO-5M to 1/8" male timecode input cable	78
Figure 10-9 LEMO-5M to XLR-3M timecode input cable	78

Table of Tables

Table 1-1 Approved vs. Unapproved Media	12
Table 1-2 Compatible Lavalier Microphones	13
Table 1-3 Compatible Stick Microphones	13

Table 1-4 Audio Frequency Block Information	14
Table 2-1 Power Switch Positions	15
Table 2-2 TRX900 (/AA) Standard & Extended Menus.....	16
Table 2-3 TRX992 Standard & Extended Menus.....	19
Table 2-4 TRX700 Standard & Extended Menus.....	21
Table 2-5 TRX800 Standard, Extended & Factory Setup Menus.....	23
Table 2-6 Format Error Codes	33
Table 3-1 Available Recording Time	40
Table 3-2 Recorder LED Indications.....	41
Table 5-1 RX900 (M/S) Audio Pin-outs.....	48
Table 5-2 RX900 (M/S) Receiver Standard, Extended & Test Menus	48
Table 5-3 RX4900 Receiver Audio Pin-outs.....	50
Table 5-4 RX4900 RS-485 Pin-outs (RJ-45)	50
Table 5-5 RX4900 Receiver Standard, Extended & Test Menus	51
Table 6-1 IFB100 Standard, Extended & Factory Setup Menus.....	59
Table 13-1 Audio Settings that must be Consistent	99
Table 13-2 IFB Settings that must be Consistent.....	99

Chapter 1 – Topics that apply to most units in the system

Transceivers (TXs with IFB, Timecode and Remote Control Capable Receivers)

What's included with the TRX900 (IAA)

- 1 – SSMA 'Whip' Antenna
- 1 – media slot dust plug
- 1 – belt clip
- receive timecode and remote control signals from the optional IFB100
- 1 – blue Zaxcom storage/carrying case
- user manual on CD-ROM

Options

- TRX901 – Internal recording option
- TRX10 – Receive audio portion of IFB100 transmission (requires EA100 or STAxXX for monitoring IFB audio)
- TCA100 – Timecode adapter
- STA100 – Stereo adapter
- STA150 – New stereo adapter
- EA100 – Earpiece adapter
- MSA100 – Mute switch

What's included with the TRX992

- 1 – SSMA 'Whip' Antenna
- 1 – media slot dust plug
- 1 – belt clip
- 1 – VPX battery
- 1 – VPX battery charger (single)
- receive timecode and remote control signals from the optional IFB100
- TRX10 – Receive audio portion of the IFB100 transmission (requires EA100 or STAxXX for monitoring IFB audio)
- TRX901 – Internal recording option
- 1 – blue Zaxcom storage/carrying case
- user manual on CD-ROM

Options

- Additional VPX batteries

Transmitters Only

What's included with the TRX700

- 1 – SMA 'Whip' Antenna
- 1 – blue Zaxcom storage/carrying case
- user manual on CD-ROM

Options

- TRX901 – Internal recording option

What's included with the TRX800

- 1 – SMA 'Whip' Antenna
- 1 – blue Zaxcom storage/carrying case
- user manual on CD-ROM

Options

- TRX901 – Internal recording option
- Shure microphone capsule(s)

Receivers

What's included with the RX900 (M/S)

- 2 – SMA 'Whip' Antennas
- 1 – power connector
- 1 – audio output connector {RX900S only}
- 1 – blue Zaxcom storage/carrying case
- user manual on CD-ROM

Options

- A/C power supply

What's included with the RX4900

- A/C power supply
- user manual on CD-ROM

Options

- 8 dB gain passive 50-ohm log-periodic ("Shark-fin") antenna

IFB/Remote Control Unit

What's included with the IFB100

- 1 – 2.4 GHz SMA antenna
- 1 – power connector
- 1 – media slot dust plug
- 1 – audio input connector
- 1 – blue Zaxcom storage/carrying case
- user manual on CD-ROM

Options

- A/C power supply
- 2.4 GHz, 6 dB gain, omni-directional antenna – Recommended for indoor or studio use where it can be placed in the center of the studio.
- 2.4 GHz, 15 dB gain, directional antenna – Recommended for positioning against a wall, or when a directional transmission is desired.
- 10 foot cable (~3 meter) from the IFB100 to the 2.4 GHz antenna

User Manual Conventions

Throughout this manual, the following conventions are used:

- **TRX900 (/AA)** – refers to the TRX900 and TRX900AA.
- **TRX9xx** – refers to the TRX900, TRX900AA and TRX992.
- **RX900 (M/S)** – refers to the RX900M and RX900S.
- **STAx** – refers to the STA100 and STA150.
- **Cycle the power** – refers to turning power to the unit 'OFF', waiting a few seconds and then turning the power 'ON'.
- **{p.##}** – refers to the page number on which the menu page is described.
- **MiniSD card** – refers to any approved card in [Table I-1](#) {p.12}.

System Features

- Superb audio quality that rivals a hardwired microphone
- Fault tolerant broadcast quality recording
- Digital modulation wireless transmission
- Digital drop-out protection
- 96 hours of audio directly on a 16 GB removable MiniSD card
- Audio recording and transmission at 24 bits/48 kHz
- Supports both record/stop and continuous loop recording
- Backlit graphic liquid crystal display
- Frequency selectable highpass filter
- Selectable peak limiter
- Lightweight rugged design
- Integrated TC reader/generator accurate to 1 frame in 6 hours
- Efficient keypad for one-handed operation
- Integrated timecode reception (TRX9xx only)
- RF remote control of TRX9xx transmitters:
 - Audio gain (Raise/Lower)
 - Recording (Start/Stop)
 - Transmitter power (On/Standby)
 - Remote frequency change
- Transmission delay:
 - US Mono mode – 3.6 ms
 - Euro mode – 6 ms
 - Stereo mode – 6 ms
- Battery runtime:
 - TRX900 – up to five hours @ 50 mW on one CR123 battery
 - TRX900AA – up to ten hours @ 50 mW on two AA Lithium batteries
 - TRX992 – up to four hours @ 50 mW on one VPX battery
 - TRX700 – up to four hours @ 50 mW on two AA Lithium batteries
 - TRX800 – up to five hours @ 50 mW on one CR123 battery
 - RX900 (M/S) – up to four hours on four AA NiMH batteries
 - RX4900 – no internal batteries, always runs on external power
 - IFB100 – no internal batteries, always runs on external power
- Size and weight: (H x W x D – while looking at the screen)
 - TRX900 – 2.3" x 2.3" x 0.65" – 58 mm x 58 mm x 17 mm – 4.0 oz – 113g
 - TRX900AA – 3.38" x 2.3" x 0.65" – 86 mm x 58 mm x 17 mm – 4.0 oz – 113g
 - TRX992 – 5.5" x 2.9" x 1.1" – 140 mm x 74 mm x 28 mm – 13.2 oz – 374g
 - TRX700 – 1.75" x 3.75" x 1.75" – 44 mm x 95 mm x 44 mm – 6.6 oz – 187g
 - TRX800:
 - Body – 6.12" x 1.5" – 155 mm x 38 mm – 8.2 oz – 232g
 - Capsule (ex.) – 3.0" x 3.0" – 76 mm x 76 mm – 4.9 oz – 139g
 - RX900 (M/S) – 1.25" x 3.25" x 5.25" – 32 mm x 83 mm x 133 mm – 4.0 oz – 113g
 - RX4900 – 1.75" x 19.0" x 7.94" – 44 mm x 483 mm x 202 mm – 4.2 lbs – 1900g
 - IFB100 – 3.44" x 3.88" x 0.9" – 87 mm x 99 mm x 23 mm – 6.0 oz – 170g

Menu System

The user interface for each unit consists of a Liquid Crystal Display with 3 keys, as follows:

- **MENU** – Menu page/function select: press once to move to the next menu page.
- **INC** (up arrow) – Increment the current parameter selected by the **MENU** key.
- **DEC** (down arrow) – Decrement the current parameter selected by the **MENU** key.

Each menu has several pages allowing you to change configuration settings. All of these settings are stored in Flash ROM immediately after making the change.



Figure 1-1 TRX900 Front View

Media

Some of the units read from and/or record to a MiniSD card, which is inserted into the media slot. All of the transmitters use a MiniSD card to update the unit's firmware. To be safe, you must use approved media:

Media	Manufacturer's ID	Approved?
SanDisk & Transcend 4GB SDHC MiniSD		YES
ALL Dane-Elec		NO
SanDisk 2GB MiniSD (retail packaging)	SDSDM-2048-A10M	YES
SanDisk 2GB MiniSD (bulk packaging)	SDSDM-2048, Bulk	YES
ALL SanDisk MicroSD (with MiniSD adapter)		YES
ALL SanDisk Ultra		NO
ALL SanDisk Ultra II		NO
Transcend 2GB (x80) MiniSD	TS2GSMD80	YES
ALL Transcend (x45)		NO
Transcend 4GB MiniSD	TS4GSMD80	YES
Any brand that prints the info on a sticker applied to the chip		NO

Table 1-1 Approved vs. Unapproved Media

IMPORTANT: To use any 4GB card, V5.53 or greater is required

If unapproved media is used, it can become jammed in the MiniSD socket and damage it.

CAUTION: Damage resulting from using unapproved media is not covered by the warranty.

Do **not** use SanDisk Ultra II cards. Formatting one of them may make it unusable.

Microphones

Compatible Lavs

Use one of the following microphone models:

Brand	Model	Voltage	Notes
Countryman	B6	1.5	
Countryman	E6 omni		
Countryman	EMW	1.5	Specify for use with Zaxcom
DPA	4063-BMZ	3	Use only the Zaxcom 3.3 V model
Sanken	COS-11D		
Sennheiser	MKE-2 Platinum	3	
Sennheiser	MKE-2 Gold		New model – YES. Older models – NO
Shure	WL50	5	
Sony	ECM77		
Tram	TR-50		
Voice Tech.	VT401HS		
Voice Tech	VT506		
Voice Tech.	VT910		

Table 1-2 Compatible Lavalier Microphones

Additional microphones will be added to this list after a review of their 3.3v power performance and RF interference susceptibility has been completed.

Compatible Stick Mics

Use one of the following microphone models:

Brand	Model	Voltage	Notes
Schoeps	CMC6MK4I		
Sennheiser	MKH 40		Older models may pickup some RFI
Sennheiser	MKH 50		
Sennheiser	MKH 60		
Sennheiser	MKH 816		

Table 1-3 Compatible Stick Microphones

Additional microphones will be added to this list after a review of their RF interference susceptibility has been completed.

General

The TRX900 (/AA) has an unbalanced microphone input accessed through a 3-pin micro-LEMO connector. You can use an unbalanced dynamic microphone or a powered lavalier. It is recommended that you use 3-wire lavaliers with separate pins for ground, audio and power.

When using a Line-level input, an inline pad is required on the standard dynamic microphone input cable (XLR-3 to 3-pin micro-LEMO).

When using a phantom powered microphone with the TRX900 (/AA), you must use an external 48 VDC power supply. The TRX700 and TRX992 are the only Zaxcom transmitters that include a 48 VDC phantom power supply.

NOTE: Once upon a time, the Denecke 48V power supply could damage the now discontinued Goldline transmitter's preamp. This is **NOT** the case with the TRX900 (/AA).

Battery Installation

Each unit may require one to four batteries.

CAUTION: Always observe the correct battery polarity. The negative contact on the battery is always connected to the spring contact.

Never use any battery that is missing insulation on its body. If you do, it can cause a short circuit in the battery compartment, causing damage to the unit.

Battery Life

IMPORTANT: If operating using internal batteries, it is recommended that you use only Lithium or rechargeable NiMH. Any other battery chemistry including Alkaline and Ultra batteries have a substantially reduced runtime compared to Lithium or NiMH cells. This is true for all Zaxcom units.

External Power

Some of the units can be powered from an external power source. The external power connection is a 2.5 mm (0.1") barrel connector. The center pin is positive. The connector for the receiver (761K) is longer than the connector for the STAxXX and IFB100 (760K). The 760K will not work in any of the receivers.

Operating Frequencies

Audio

All audio transmitters and receivers operate on one of the following frequency blocks:

Block	Frequency Range	TV Blocks	Block	Frequency Range	TV Blocks
20	518.000 to 542.000	22 to 25	27	686.000 to 722.000	50 to 55
21	536.000 to 572.000	25 to 30	28	722.000 to 746.000	56 to 59
22	560.000 to 590.000	29 to 33	29	740.000 to 770.000	59 to 63
23	590.000 to 614.000	34 to 37	30	764.000 to 794.000	63 to 67
24	614.000 to 644.000	38 to 42	31	794.000 to 818.000	68 to 71
25	638.000 to 668.000	42 to 46	32	818.000 to 842.000	72 to 75
26	662.000 to 692.000	46 to 50	33	838.000 to 854.000	79 to 80

Table 1-4 Audio Frequency Block Information

IMPORTANT: As of 12 June 2009, the USA has phased out analog television. As a result, frequencies between 698.0 and 806.0 MHz are no longer available for use in the USA.

Only the frequencies in one specific block are available to a particular transmitter and its associated receiver. Coordinate with your dealer or Zaxcom to determine which block(s) are the best to use in your area(s).

Remote Control, Timecode and IFB Feed

If the optional IFB feed and IFB remote control options are included, their frequency range is:

Current model for use Worldwide: 2.403 to 2.475 GHz

Antenna Cable Selection

When selecting a cable to use, it should be as short as possible. When using standard cable, the recommended length should not exceed 10 feet. However, if greater than 10 feet is needed, a very low loss cable should be used.

For maximum performance, use only high quality 50-ohm coax cable and only as much as is required, otherwise the receiver's sensitivity may suffer.

When permanently installing cables, use 1/2" Andrew heliax (<http://lawapps.commscope.com/catalog>). Using heliax cable, a run of 100 feet (~ 30.5 meters) can be achieved without significant power loss.

Chapter 2 – Digital Wireless System Transmitters

This chapter is intended to quickly familiarize you with the functions of each of the Digital Wireless System transmitters.

Getting to Know Your TRX900 (IAA) Bodypack Transmitter

Both the TRX900 and TRX900AA are identical in operation. The only difference is the type of battery used. The TRX900 uses a single CR123 battery, whereas the TRX900AA uses two AA batteries (Lithium or NiMH). This section was written based on firmware version 6.08.

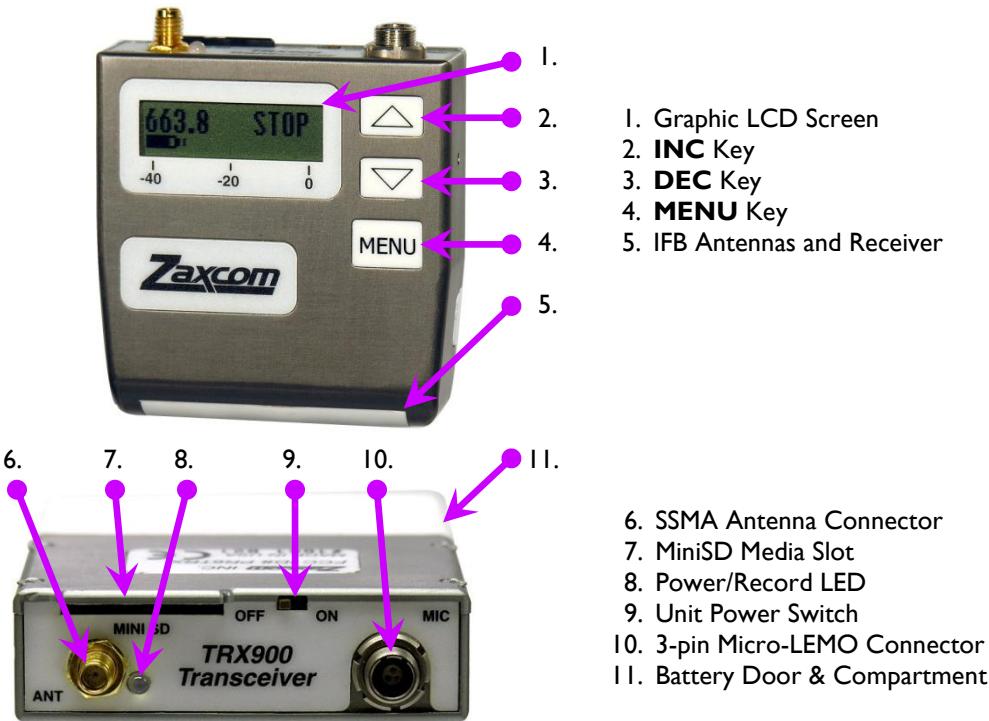


Figure 2-1 TRX900 Front and Top Views

Device Interface

Media Slot

This slot holds a MiniSD card for local recording and is protected from accidental ejection by a guard bar. To insert a card, with the screen facing you, turn the card so the finger contacts are facing you and down toward the slot. Insert it into the slot and press it down until you hear a slight click. To remove it, press it in until you hear the same click again.

Transmitter Antenna

The transmitter uses a gold plated SSMA connector. You should periodically check that the connector is still securely tightened.

Unit Power Switch – Internal/External Power Switch

The Power switch is intentionally set below the frame of the transmitter to prevent accidentally turning it 'OFF' during use.

When the Zaxcom Stereo Adapter (STAxXX) is connected, the ON/OFF switch becomes an internal or external power select switch.

Switch Position	No Stereo Adapter Installed	Stereo Adapter Installed
'ON'	'ON'	Internal Power
'OFF'	'OFF'	External Power

Table 2-1 Power Switch Positions

IFB Antenna

CAUTION: The antenna is located behind the white rubber panel on the bottom of the unit. Don't place anything in front of this area that could block reception. Also, don't allow anything to press in on this area, the antenna and/or receiver could be damaged.

TRX900 (IAA) Configuration Menus

There are seven **Standard** and twenty-five **Extended** menu pages, as follows:

Standard Menu	Extended Menu
Pacifier page {p.26}	Highpass Filter page {p.30}
Audio Gain page {p.27}	Limiter page {p.30}
Audio Tx Frequency page {p.27}	Audio Tx Format page {p.31}
Transport Control page {p.28}	IFB Format page {p.31}
Timecode Frame-rate page {p.28}	IFB Enable page {p.31}
Earpiece Source page {p.28}	IFB Voting Enable page {p.32}
Lock page {p.29}	IFB Frequency page {p.32}
	Power-up Mode page {p.32}
	Media Erase & Format page {p.32}
	Timecode Jam Mode page {p.33}
	Timecode Source page {p.33}
	Timecode Output Enable page {p.34}
	Remote Control Group ID page {p.34}
	Remote Control Unit ID page {p.34}
	Expander page {p.34}
	Dynamics page {p.35}
	ADC Location page {p.36}
	Battery Type page {p.36}
	Recording Mode page {p.36}
	Audio Tx Power page {p.36}
	Boot-up Mode page {p.37}
	Mute Switch Enable page {p.37}
	Left/Right Key Assignment page {p.37}
	Track Name page {p.37}
	Security Code page {p.38}

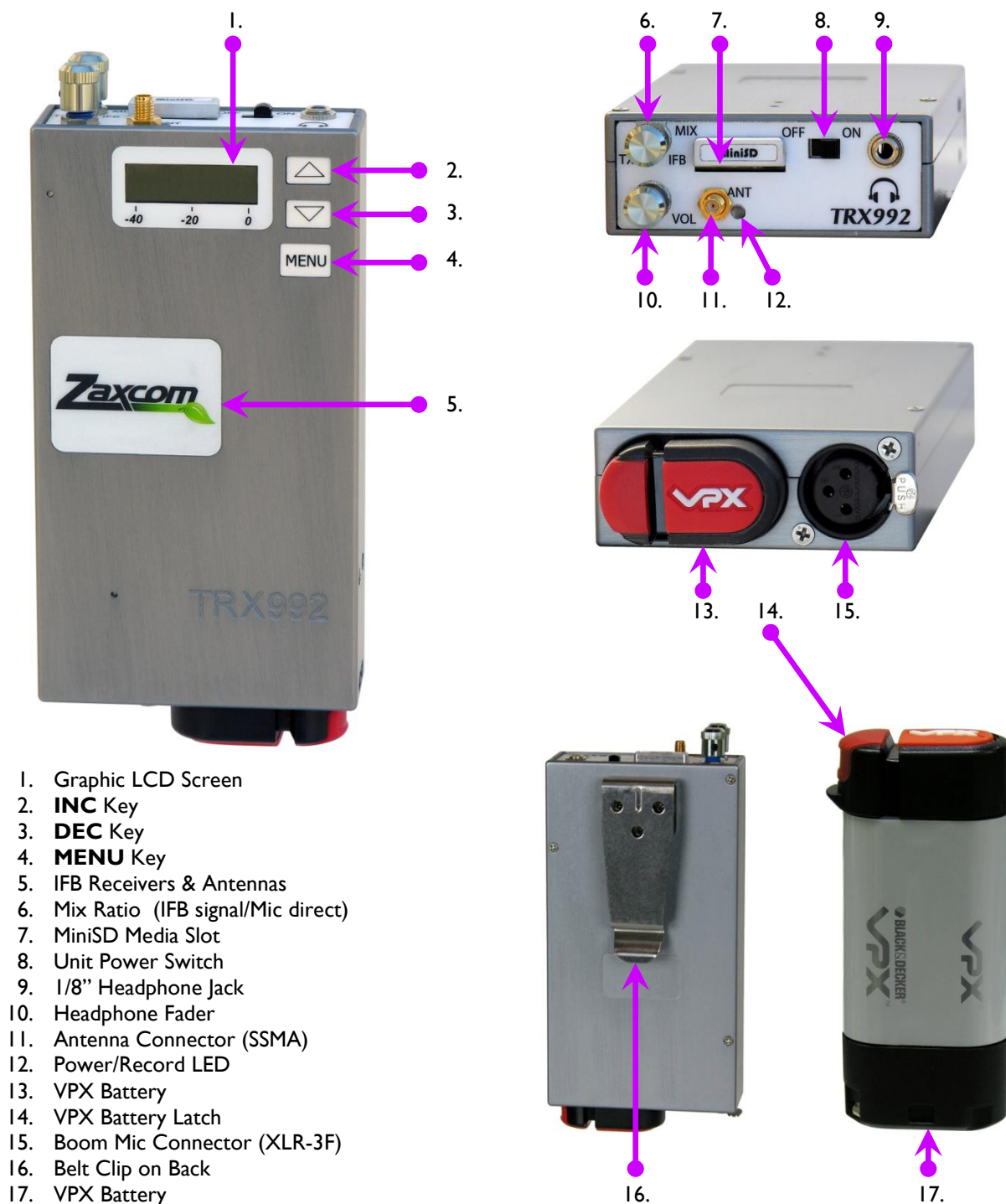
Table 2-2 TRX900 (IAA) Standard & Extended Menus

Each time the **MENU** key is pressed, the menu advances to the next page, in sequence.

Getting to Know Your TRX992 Wireless Boom Transmitter

The TRX992 uses a single VPX battery (Lithium-Ion). Additional batteries, at a very reasonable price, can be found where Black & Decker power tools are sold. This section was written based on firmware version **6.08T**.

IMPORTANT: The software for the TRX992 is a separate version from the software used by the remaining wireless equipment. The software version # will **ALWAYS** end with "T".



1. Graphic LCD Screen
2. **INC** Key
3. **DEC** Key
4. **MENU** Key
5. IFB Receivers & Antennas
6. Mix Ratio (IFB signal/Mic direct)
7. MiniSD Media Slot
8. Unit Power Switch
9. 1/8" Headphone Jack
10. Headphone Fader
11. Antenna Connector (SSMA)
12. Power/Record LED
13. VPX Battery
14. VPX Battery Latch
15. Boom Mic Connector (XLR-3F)
16. Belt Clip on Back
17. VPX Battery

Figure 2-2 TRX992 Front, Top, Bottom, Back & Battery Views

Device Interface

Mix Ratio

This fader controls the ratio between the audio coming directly from the mic and audio coming from the IFB feed and is enabled when you set [Earpiece Source page](#) {p.28} to **IFB MIX ALL**.

NOTE: If you choose to mix the audio with the IFB return audio you will hear phasing. The reason is the slight delay in the transmission process before it gets to your headphone. That delayed IFB audio, in concert with the audio coming directly from the mic, is what causes this phasing, and is totally normal.

Headphone Fader

This fader controls the volume level to the 1/8" headphone jack. Before putting your headphones on, be sure to turn 'OFF' (full counter-clockwise) the headphone volume.

Media Slot

This slot holds a MiniSD card for local recording and is protected from accidental ejection by a guard bar. To insert a card, with the screen facing you, turn the card so the finger contacts are facing you and down toward the slot. Insert it into the slot and press it down until you hear a slight click. To remove it, press it in until you hear the same click again.

Transmitter Antenna

The transmitter has a gold plated SMA connector. You should periodically check that the connector is still securely tightened.

Unit Power Switch

This switch is not as low profile as those on the TRX900 (/AA). Since this unit is not being used on talent, it should not be a problem.

IFB Antennas

CAUTION: These antennas are located behind the Zaxcom label on the front face. Don't place anything in front of this area that could block reception. Also, don't allow anything to press in on this area, the antenna and/or receivers could be damaged.

Battery Slot

The VPX battery slides into the battery opening in the bottom of the unit. The battery can only seat in one direction, with the red latch away from the XLR connector. Be sure to press it in far enough that it clicks (locks) into place. To remove the battery, press the red edge inward and gently pull the battery out.

Phantom Power Switch & Mic/Line Switch

See Fig 2-3 to get your bearings. Looking inside the opening for the battery, behind the XLR-3F, you will see a red base and two black switches sticking up from it. The closest switch is for phantom power. Pushing it away from the bottom is 'ON'. The farthest switch is for Mic/Line-level selection. The closest position is for Line-level.

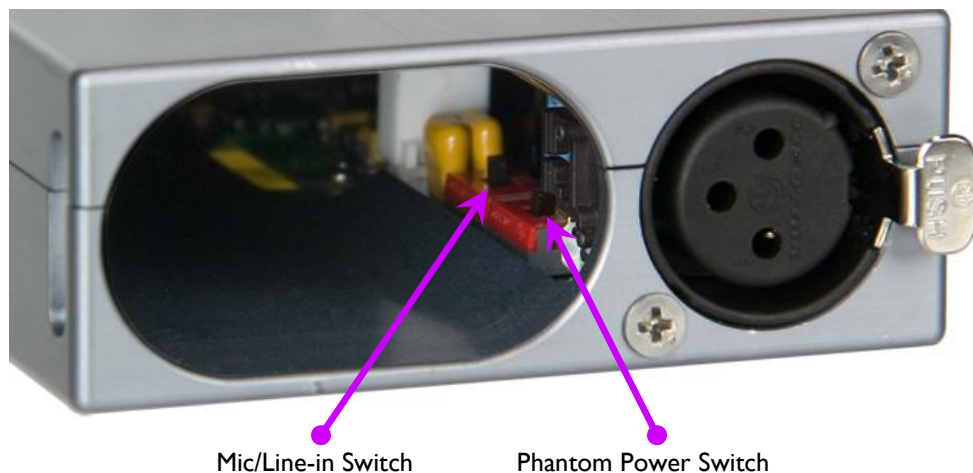


Figure 2-3 Internal Switches Location

TRX992 Configuration Menus

There are seven **Standard** and twenty-five **Extended** menu pages, as follows:

Standard Menu	Extended Menu
Pacifier page {p.26}	Highpass Filter page {p.30}
Audio Gain page {p.27}	Limiter page {p.30}
Audio Tx Frequency page {p.27}	Audio Tx Format page {p.31}
Transport Control page {p.28}	IFB Format page {p.31}
Timecode Frame-rate page {p.28}	IFB Enable page {p.31}
Earpiece Source page {p.28}	IFB Voting Enable page {p.32}
Lock page {p.29}	IFB Frequency page {p.32}
	Power-up Mode page {p.32}
	Media Erase & Format page {p.32}
	Timecode Jam Mode page {p.33}
	Timecode Source page {p.33}
	Timecode Output Enable page {p.34}
	Remote Control Group ID page {p.34}
	Remote Control Unit ID page {p.34}
	Expander page {p.34}
	Dynamics page {p.35}
	ADC Location page {p.36}
	Battery Type page {p.36}
	Recording Mode page {p.36}
	Audio Tx Power page {p.36}
	Boot-up Mode page {p.37}
	Mute Switch Enable page {p.37}
	Left/Right Key Assignment page {p.37}
	Track Name page {p.37}
	Security Code page {p.38}

Table 2-3 TRX992 Standard & Extended Menus

Each time the **MENU** key is pressed, the menu advances to the next page, in sequence.

Getting to Know Your TRX700 Plug-on Transmitter

The TRX700 uses two AA type batteries (Lithium or NiMH). It includes a switch on the side of the case to turn the 48 VDC phantom power ON/OFF. There is a MiniSD slot behind the battery cover, which is used to update the Operating System and to record audio. This section was written based on firmware version **6.08**.

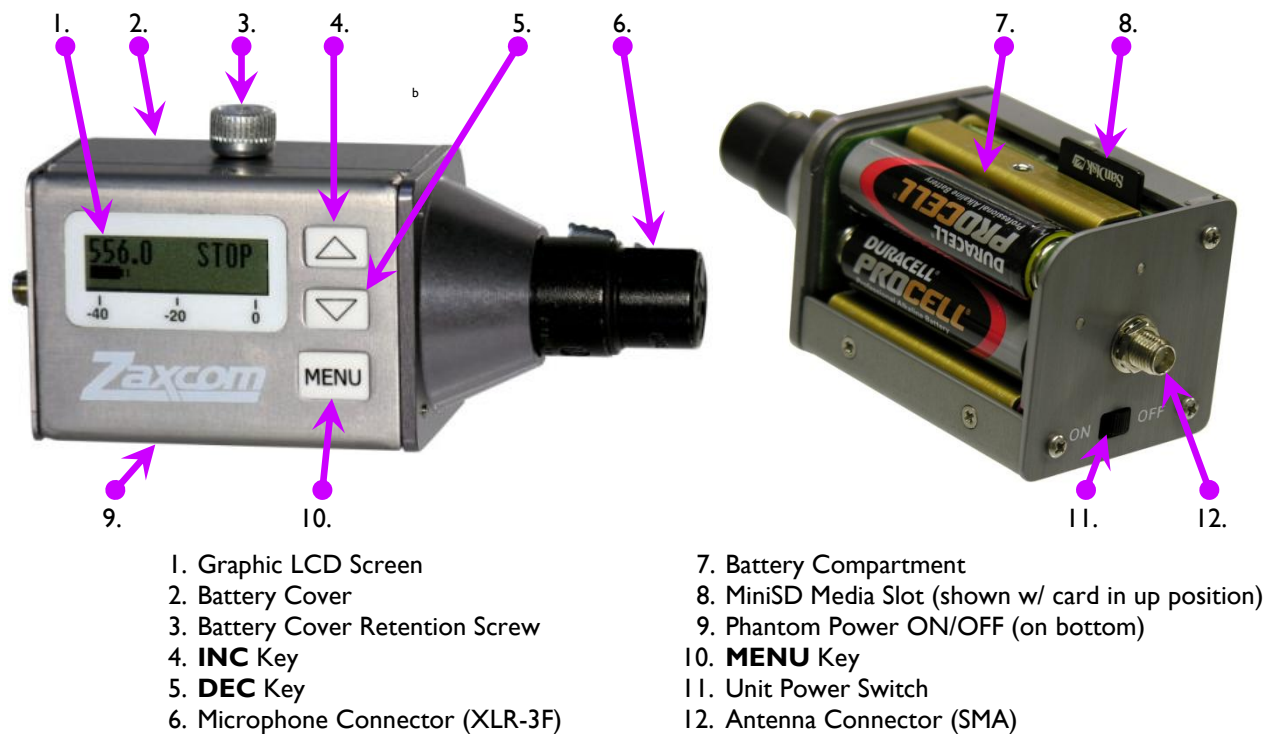


Figure 2-4 TRX700 Front & Top End Views

Device Interface

Antenna

The transmitter uses a gold plated SSMA connector. You should periodically check that the connector is still securely tightened.

Phantom Power switch

Labeled "48V" on the case, turns the 48 volt supply 'ON' or 'OFF'.

Media Slot

Located behind the battery access door, this slot holds a MiniSD card for local recording. To insert a card, with the battery compartment facing you, turn the card so the finger contacts are facing away from you and down toward the slot. Insert it into the slot and press it down until you hear a slight click. To remove it, press it in until you hear the same click again. Be aware that when you close the battery door, you have effectively pressed the card in to remove it. The next time you open the battery door be careful to not shake the unit, you could end up dropping the card.

TRX700 Configuration Menus

There are six **Standard** and nineteen **Extended** menu pages, as follows:

Standard Menu	Extended Menu
Pacifier page {p.26}	Highpass Filter page {p.30}
Audio Gain page {p.27}	Limiter page {p.30}
Audio Tx Frequency page {p.27}	Audio Tx Format page {p.31}
Transport Control page {p.28}	Power-up Mode page {p.32}
Timecode Frame-rate page {p.28}	Media Erase & Format page {p.32}
Lock page {p.29}	Timecode Jam Mode page {p.33}
	Timecode Source page {p.33}
	Timecode Output Enable page {p.34}
	Expander page {p.34}
	Dynamics page {p.35}
	ADC Location page {p.36}
	Battery Type page {p.36}
	Recording Mode page {p.36}
	Audio Tx Power page {p.36}
	Boot-up Mode page {p.37}
	Mute Switch Enable page {p.37}
	Left/Right Key Assignment page {p.37}
	Track Name page {p.37}
	Security Code page {p.38}

Table 2-4 TRX700 Standard & Extended Menus

Each time the **MENU** key is pressed, the menu advances to the next page, in sequence.

Getting to Know Your TRX800 Handheld Wireless Transmitter

The TRX800 uses a single CR123 battery.

Uses screw-on microphone capsules made by Shure™ and Neumann™. Be aware that to use a Neumann capsule, a special adapter is required. Check with Zaxcom Sales for price and availability. This section was written based on firmware version 6.08.



- | | | |
|-----------------------|---------------------------------------|------------------------|
| 1. Mic Capsule | 6. Battery Door (power switch inside) | 11. DEC Key |
| 2. Mic Body | 7. MiniSD Media Slot | 12. INC Key |
| 3. Capsule Contacts | 8. Antenna Connector (SMA) | 13. Graphic LCD Screen |
| 4. Body Contact Pins | 9. RECORD Key | |
| 5. Pad Switch (10 dB) | 10. MENU Key | |

Figure 2-5 TRX800 Side, Mic Capsule, Body Threaded End, Body Antenna End & Barrel Views

Device Interface

Antenna

The transmitter has a gold plated SMA connector. You should periodically check that the connector is still securely tightened.

Media Slot

This slot holds a MiniSD card for local recording. To insert a card, with the screen facing you, turn the card so the finger contacts are facing away from you and down toward the slot. Insert it into the slot and press it down until you hear a slight click. To remove it, press it in until you hear the same click again.

Unit Power Switch

Located inside the battery compartment, in the opposite end from the antenna.

Record Key

While in STOP mode, press it for more than 1 sec to go into RECORD mode. While in RECORD mode, press it for less than 1 second to continue recording in a new file. Also while in RECORD mode, press it for more than 1 sec to go into STOP mode.

TRX800 Configuration Menus

There are six **Standard** and fourteen **Extended** menu pages, as follows:

Standard Menu	Extended Menu
Pacifier page {p.26}	Highpass Filter page {p.30}
Audio Gain page {p.27}	Limiter page {p.30}
Audio Tx Frequency page {p.27}	Audio Tx Format page {p.31}
Transport Control page {p.28}	Power-up Mode page {p.32}
Timecode Frame-rate page {p.28}	Media Erase & Format page {p.32}
Lock page {p.29}	Timecode Output Enable page {p.34}
	Expander page {p.34}
	Dynamics page {p.35}
	Battery Type page {p.36}
	Recording Mode page {p.36}
	Boot-up Mode page {p.37}
	Left/Right Key Assignment page {p.37}
	Track Name page {p.37}
	Security Code page {p.37}

Table 2-5 TRX800 Standard, Extended & Factory Setup Menus

Each time the **MENU** key is pressed, the menu advances to the next page, in sequence.

Common Transmitter Standard Menu

Normal Startup Sequence (without any card inserted)

NOTE: several optional pages appear and are explained in this sequence. Each is present in the other startup sequences. They have not been include in those sequences for economy of space.

LCD
SYNTH AB

LOWER POWER MODE
IFB IS OFF 0

(Optional page – only appears if Low Power mode is fully enabled.)

PCB REVB BBBB
VER A-AAA (CC)

(**PCB REVB** – indicates the printed-circuit board is revision “B”.)

(**A-AAA** – indicates the currently installed firmware version.)

(**BBBB** – Programmable logic device revision code.

‘0000’=no timecode input ‘0150’=timecode input available.)

((**CC**) – indicates which options are available:

00=none, 01=Record, 02=IFB, 03=IFB & Record.)

PRESS MENU
TO START

RUNNING

(Optional pages)

(Only appears if the [Boot-up Mode page](#) is set to “STANDBY MODE”.)

(Appears after you press the **MENU** key.)

NO CARD

NAME :
DDDDDDDD

(**DDDDDDDD** – displays the “Name” entered in the Extended Menu.

The factory default is “SN :” followed by the unit serial number.)

ZAXCOM VA-AAA
TRX900 SN:ZZZZZ

(**ZZZZZ** – indicates the transmitter’s serial number.

581.6 ??H STOP





LOW BATTERY
1.60V

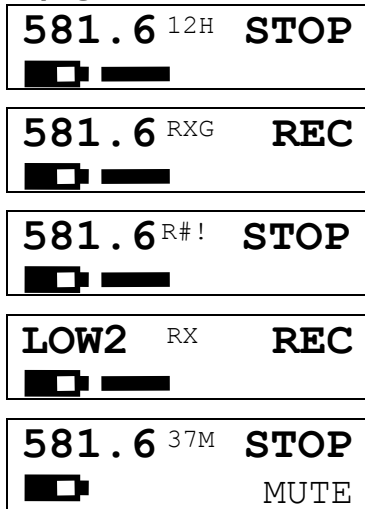
(Be aware, if you get either of these alerts, the unit may not go into RECORD mode.)

(The outline of the battery symbol starts blinking when the voltage reaches a low level.)

(This page appears when the battery has to be changed.)

Normal Startup Sequence (with a formatted card inserted)

LCD SYNTH AB	
PCB REVB BBBB VER A-AAA (CC)	
FOUND SD CARD EEEEEEEEEE	(EEEEEEEEEE – Indicates the size of the card {i.e. 2 GBYTES or 512 MBYTES})
SIZELBA 1 SEG F _	(Optional screen – occurs if the recording was not correctly closed.) (F – indicates how many previous recording(s) were found.)
FOUND F SEGS MODE=GGGGGGG	(GGGGGGG – indicates which Transmission Format is set in the Extended Menu.)
ZAXCOM VA-AAA TRX900 SN:ZZZZZ	
581.6 ^{3.0H} STOP 	
581.6 ^{RX} REC 	(As soon as the initialization sequence has completed, assuming no problems, in stand-alone mode the unit immediately goes into RECORD mode, indicated by LREC or REC .)

Pacifier page

Page purpose: This is the default page at startup and displays the following information:

- transmitter frequency
- IFB receive indicator
- recording buffer overrun
- remaining battery capacity
- recording mode
- current power mode
- available recording time
- audio input level

Press the **INC** or **DEC** key to temporarily display the current battery voltage in place of the battery icon.

Power Modes (requires remote control capability), indicated by the frequency field:

- **581.6** – When the transmitter frequency is displayed the unit is fully powered up.
- **LOW1** – The RF Power Amplifier is disabled.
- **LOW2** – The RF Power Amplifier, RF Board and Mic Pre-amp are all disabled.

NOTE: It is not possible to remotely power-down only one TRX9xx unit. It is an all or nothing event.

Receiver/Recorder status appears to the right of the frequency:

- **###H** or **###M** or **###S** – Indicates the remaining available recording time in hours, minutes and finally seconds. This item is only displayed if a MiniSD card is available for recording and the [Recording Mode page](#) {p.36} is set to **NON-LOOP RECORD**. (requires recording capability)
- **RX** – This flag will be displayed alternately with the remaining recording available recording time, if the IFB100 is running and the TRX900 is receiving it. (requires remote control capability)

NOTE: The **RX** flag indicates that an IFB100 is being received on the IFB frequency you picked. It is possible to receive IFB audio from another transmitter within range, even if it does not have the same Group ID. IFB audio is the only transmission between the IFB100 and TRX9xx units that does not use the Group ID as a filter.

- **G** – Momentarily appears to the right of the **RX** flag, when a [Remote Audio Gain Change](#) {p.60} command is received from the IFB100. (requires remote control capability)
- **R#!** – Recording buffer overrun indicator (# = 1 to 9). If it reaches 9, the recording will stop; this means the card is too slow or has been removed. (requires recording capability)
- **MAX!** – Occurs either when the 254th take is currently being recorded or when a card is inserted that already has 254 takes. That is the maximum number of takes that can be recorded on one card, no matter how large or small it is. (requires recording capability)
- **FULL** – Appears to the left of the recording mode **STOP** when the card is full and the unit's [Recording Mode page](#) {p.36} is set to Non-Loop Record. (requires recording capability)

NOTE: If **MAX!** and **FULL** both apply, only one of them will be displayed.

Recording Modes (requires recording capability):

- **STOP** – Recording is stopped (accompanied by 1 beep).
- **LREC** – Recording is started and Loop Record mode is enabled (accompanied by 2 beeps).
- **REC** – Recording is started and Non-Loop Record mode is enabled (accompanied by 2 beeps).
- **WAIT** – May appear just before going into record, or if the card is ejected while recording.

Input Audio Level: The bar to the right of the battery icon is the input audio level, calibrated in dBFS.

Mute Switch Indication: If the MSA100 mute switch is installed and the [Mute Switch Enable page](#) {p.37} is enabled, when the mute switch is turned 'OFF', audio input is disabled and the Input Audio Level bar is replaced with "MUTE".

Audio Gain page



Page purpose: This page adjusts the mic gain, using the **INC** or **DEC** key.

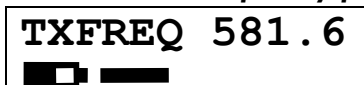
Parameters: (Valid range: 0 to 52, Value step: 2)

When audio is applied to the microphone input, the LCD indicates the signal strength using a bar graph displayed horizontally from left to right (-40 to 0 dBFS). The gain should be set so that the meter is peaking between -20 and -10 dBFS. This is about half way between the -20 and 0 dBFS markings below the meter. If no microphone is connected, the bar graph remains blank.

The transmitter features a digitally controlled analog limiter that is situated before the A/D converter. This prevents the A/D convertor from clipping by automatically attenuating the mic gain when excessive audio is detected.

The limiter engages before the signal exceeds the digital capabilities of the signal path. The limiter activates at -6 dBFS. The gain level should be set low enough to prevent it from engaging, even when talent is screaming.

Audio Transmitter Frequency page



Page purpose: This page sets the audio transmitter's center frequency.

Parameters: (Valid range: (see [Table 1.4](#) {p.14}), Value step: .1)

The transmitter can operate on any frequency between 518.0 and 870.0 MHz but your unit can only operate in its assigned block within this frequency range.

There is a one-second delay while moving to a new frequency. If the frequency is changed quickly, the transmitter remains quiet until the desired frequency has been selected.

When operating multiple transmitters in the same area, it is recommended that you use at least 1 MHz separation between radios. If audio frequencies are difficult to obtain, the minimum spacing can be as low as 0.6 MHz while using US modulation, or 0.5 MHz while using European modulation. Using a large frequency separation between each transmitter aids in their clear reception. Maintaining a distance of 20 feet or more between transmitter and receiver also aids in reception when several transmitters are used at the same time. This will prevent any transmitter from de-sensing any of the receivers.

Frequency planning programs, which are used to prevent intermodulation problems, are not needed when using the Zaxcom Digital Wireless system. However, if regular FM wireless mics are being used near the Zaxcom system, you must plan your frequency assignments to prevent intermodulation. When two FM transmitters come close to each other, they can produce interference on adjacent frequencies. Since this interference is transmitted over the air, there is no way for a Zaxcom receiver to reject it. However, Zaxcom transmitters do not suffer from this problem.

Transport Control page

```
STOP 00:00:00:00
000:
```

Page purpose: (Requires recording option) This page allows the operator to review the recorded audio.

The top line, left-hand side displays the current mode: **REC**, **PLAY** or **STOP**. The right side contains the timecode based on the current mode. The bottom line contains the count of recording segments on the currently installed card.

The transport control page changes based on whether the transmitter is in Play mode, Stop mode or is displaying the current timecode information.

Enter the Transport Control page

Repeatedly press the **MENU** key until the transport status is shown on the left side of the LCD. The current transport timecode is displayed while in the transport control page.

Stop mode (playback)

Pressing the **DEC** key places the transmitter in Stop mode. While in Stop mode, the playback pointer can be moved backward by pressing the **DEC** key.

Play mode (playback)

Pressing the **INC** key places the transmitter in Play mode. While in Play mode, the playback pointer can be moved forward by pressing the **INC** key.

The current playback timecode is displayed in the transport control page.

Exiting the Transport Control page

Pressing the **MENU** key returns the transmitter to Record mode at the last recorded location on the media.

Timecode Frame-rate page

```
TIMECODE 30NDF
GEN 00:00:00:00
```

Page purpose: (Requires recording option) This page sets the frame-rate used to record audio on the inserted MiniSD card and displays the timecode as it is being recorded.

Parameters: [23.98] / [24] / [25] / [29.97NDF] / [29.97DF] / [30NDF] / [30DF]

Earpiece Source page


```
IFB EARPIECE:
IFB RX AUDIO
```


Page purpose: **TRX9xx ONLY** – This page establishes the source for the audio being monitored during operation.

Parameters:

- **IFB MIX ALL** – the earpiece receives its audio from both the media and the IFB receiver.
- **IFB RX AUDIO** – the earpiece receives its audio from the IFB receiver.
- **REC/PLAY** – the earpiece receives its audio from the media.

Lock page

LOCK 5


LOCKED 00:00:00:0


Page purpose: This page enables a lock function to prevent accidentally changing settings.

This page has a five-second countdown. After the timer expires, the display indicates **LOCKED**.

Locking the controls prevents accidentally changing settings. As a safety feature, while the unit is locked, only the unlock combination is available.

Press the **INC** or **DEC** key to temporarily display the current battery voltage in place of the battery icon.

If you scan past the **LOCK** display to the next menu page, the **LOCK** will not engage.

Unlocking the transmitter

Simultaneously press the **MENU** and **INC** keys. Once it is unlocked, the screen will display the [Pacifier page](#) {p.26}. Powering down the unit will also clear the lock.

Common Transmitter Extended Menu

These menu pages contain parameters that are infrequently changed.

Extended Startup Sequence (without any card inserted)

LCD
SYNTH AB

PCB REVB BBBB
VER A-AAA (CC)

NO CARD

EXT MENU MMM DD
A-AAA HH:MM:SS

(**MMM DD** – indicates the month and day the installed firmware was created.)

(**HH:MM:SS** – indicates the time of day the installed firmware was created.)

ZAXCOM VA-AAA
TRX900 SN:ZZZZZ

EXTENDED MENU
PRESS UP TO EXIT

Extended Startup Sequence (with a formatted card inserted)

```
LCD
SYNTH AB
```

```
PCB REVB      BBBB
VER A-AAA     (CC)
```

```
FOUND SD CARD
PCB REVB      BBBB
```

```
EXT MENU     MMM DD
A-AAA       HH:MM:SS
```

```
FOUND F SEGS
MODE=GGGGGGG
```

```
ZAXCOM       VA-AAA
TRX900       SN:ZZZZZ
```

```
EXTENDED MENU
PRESS UP TO EXIT
```

Entering the Extended Menu

1. Power down the transmitter.
2. Press and hold the **MENU** key while powering up the unit.

Exiting the Extended Menu

Cycle the power, or hold down the **MENU** key to get back to this page and press the **INC** key

NOTE: All changes are saved to Flash ROM as soon as they are committed.

Highpass Filter page

```
HIGH PASS: OFF
```

Page purpose: This page maintains the cutoff frequency for the highpass filter.

Parameters:

- (Valid range: 30 to 220Hz, Value step: 10)
- **OFF**

Limiter page

```
LIMITER: OFF
```

Page purpose: This page enables/disables the limiter function.

Parameters: [OFF] \ [ON]

NOTE: This page applies to the mic input only. It does not come into play for the STAxXX.

When the input signal is too high for the gain setting, it is clipped and results in distortion and popping. The limiter is used to prevent clipping by beginning to engage around -10 dBFS. When using a microphone, normally you would enable the limiter. However, if the input signal is coming from a mixer that is using a limiter, you should disable this limiter.

Since it is implemented in the digital domain, the automatic limiter may engage even when you don't hear any substantial audio. The purpose of the limiter is to prevent the mic preamp from over-driving the A/D converter,

so the limiter operates on audio before it has been processed by the highpass filter. If there is a massive amount of low frequency audio content being filtered out, such as wind noise, you may hear the effects of the limiter without hearing the audio that caused the limiter to engage. If this occurs, the gain is set too high and you must reduce it to below the level that triggers the limiter.

Audio Transmission Format page

TX FORMAT :
US MONO

Page purpose: This page maintains the audio transmission format.

Parameters:

- **US MONO-R** – similar to **US MONO**. This is used with the STAxxx to force the audio to the right channel (matches up with **0=US** on the receiver).
- **STEREO** – This is the setting to use when the stereo adapter is connected to the transmitter and you are recording in stereo (matches up with **2=ST** on the receiver).
- **EUROPEAN** – This setting transmits in Wideband Mono mode. This mode is recommended for European customers or countries where 120 kHz channel bandwidth is legal (matches up with **1=EU** on the receiver).
- **US MONO** – This setting transmits in Wideband Mono mode. This mode is recommended for US customers or other countries where a 200 kHz channel bandwidth is legal (matches up with **0=US** on the receiver).

IMPORTANT: Any change made to this page requires a reboot before the new setting will take effect.

NOTE: If the Transmission Format here and the Reception Format on the associated receiver do not match, the receiver will be unable to correctly decode the audio from this transmitter.

IFB Format page

IFB FORMAT :
LOW Q

Page purpose: **(Requires IFB AUDIO OPTION) TRX9xx ONLY** – This page controls the quality of the received IFB signal.

Parameters:

- **HIGH Q** – enables high quality audio reception.
- **LOW Q** – enables standard quality audio reception.

IMPORTANT: All units in the same group **MUST** use the same format to function correctly.

IMPORTANT: Any change made to this page requires a reboot before the new setting will take effect.

NOTE: As of version 6.08, it is now possible to receive High Quality audio and receive timecode and remote control signals.

IFB Enable page

RXMODE=RX
RXED BLOCKS 000

Page purpose: This page enables/disables the IFB receiver.

Parameters: [OFF] \ [RX]

Disabling the IFB receiver will reduce power consumption by 20 mA and increase battery run time by ~10%.

IFB Voting Enable page

```
IFB VOTING:
NORMAL (OFF)
```

Page purpose: This page enables/disables the IFB Voting function.

Parameters: [NORMAL (OFF)] / [2 TXERS (ON)]

To use this function, you will need a second IFB100 that is also connected by audio cable to your cart and placed some distance away in the direction you expect Talent to travel. Set the frequency of this second IFB to 2 MHz (+ 0.002 GHz on the [IFB Frequency page](#) {p.62}) above the first unit. Also be sure to set the [IFB Frequency page](#) {p.32} on the Audio Transmitter(s) (i.e. TRX900) to the lowest frequency assigned to the two IFB100s.

In operation, the first IFB100 will be closer to (or on) your cart and the second IFB100 will be some distance away to cover the area you anticipate using. While the audio transmitter(s) (i.e. TRX900) is within range of the first IFB100, it will be receiving IFB audio on that lower IFB frequency. Once the TRX900 has gone out-of-range of the first IFB and gone into-range of the second IFB, the TRX900 IFB receiver will switch to receiving on the frequency assigned to the second IFB. If over time, the unit moves out-of-range of the second IFB and back into-range of the first IFB, the TRX900 will once again start receiving on the first IFB's assigned frequency.

IFB Frequency page

```
IFB FREQ: 2.403
RX BLOCKS: 0000
```

Page purpose: This page maintains the IFB transmitter's center frequency.

Parameters: (Valid range: 2.403 to 2.475 GHz, Value step: 0.001)

Power-up Mode page

```
POWER UP MODE:
UNLOCKED
```

Page purpose: This page sets whether or not the unit will power up with the keys locked

Parameters:

- **LOCKED** – The keys are locked upon power-up.
- **UNLOCKED** – The keys are unlocked upon power-up.

This page works like the [Lock page](#) {p.29}. The only difference is that while the unit is locked using **Power-up Mode**, every time it is powered up, the keys will be locked and it will be necessary to unlock them before you can view/change anything.

Unlocking the transmitter

Simultaneously press the **MENU** and **INC** keys. Once it is unlocked, the screen will display the [Pacifier page](#) {p.26}.

Media Erase & Format page

```
PRESS UP KEY 5X
TO ERASE CARD
```

```
SUCCESS (REBOOT)
#### MBYTES
```

```
FORMAT FAILED
ERROR ##
```

Page purpose: This page erases and formats a MiniSD card.

This must be done before the card can be used (or to erase the contents) in the transmitter.

To Format a Card:

1. Before formatting the card, enter the name ([Track Name page](#) {p.37}) to be used for this card.
2. With the power 'OFF', insert the memory card into the media slot with the label to the back of the unit. Press it all the way in; it will lock down.
3. Press and hold the **MENU** key while the transmitter is powered up.
4. Repeatedly press the **MENU** key until the screen displays **PRESS UP KEY 5X TO ERASE CARD**.
5. Press the **INC** key 5 times. (displays **FORMATTING FAT32**)
6. Sometime later displays **ERASING SEGMENTS**.
7. And finally displays **SUCCESS #### MBYTES** or **FORMAT FAILED ERROR ##**, where **####** indicates the space on the card available for recording and **##** is one of the following error codes:

Error Code	Description
- 1	No SD card found
- 2	No FAT32 format found
- 3	Invalid SD card sector size

Table 2-6 Format Error Codes

Be sure the transmitter displayed **SUCCESS #### MBYTES** before using it to record.

If the transmitter displayed **FORMAT FAILED ERROR ##**, do not use the card for recording in the transmitter.

8. Once the Success message (see above) appears, you will need to reboot so the unit can mount the card.

To Recreate the Wrapper Files (will not destroy existing audio takes):

Repeat each of the steps above, but substitute the following for step 5:

5. Press the **DEC** key 9 times. (displays **FORMATTING FAT32**)

NOTE: The Recreate Function is available in 5.92 and later. "Wrapper Files" are everything on the card except the DELETE.ME file, which consists of the folder and the files in the folder,

IMPORTANT: This function will not work if you record audio and then delete the files. It only works if you initialize the card, then delete the wrapper files and then record audio on it.

Timecode Jam Mode page

TC JAM MODE:
MANUAL (OFF)

Page purpose: This page maintains how received timecode will be used.

Parameters:

- **AUTO-LOAD** – start and stop the transmitter's recorder, based on the [Timecode Source page](#) {p.33} selection:
 - If an IFB100 is being used - when the IFB100 timecode starts and stops.
 - If an STAxXX/TCA100 is being used and the timecode source is connected to it when the timecode source starts and stops.
- **AUTO-JAM** – continuously jams timecode, based on the [Timecode Source page](#) selection.
- **MANUAL (OFF)** – jam timecode once, based on the [Timecode Source page](#) selection.

Timecode Source page

TC SOURCE:
IFB (RF)

Page purpose: This page maintains which input to use as the timecode source.

Parameters:

- **SIDE CONNECTOR** – Accept a timecode source connected to the attached STAxXX's side connector.
- **IFB (RF)** – Accept a timecode source connected to the IFB100.
- **AUDIO INPUT** – Accept a timecode source connected to the Audio Input connector.

Timecode Output Enable page

TIMECODE OUTPUT:
OFF

Page purpose: This page enables/disables timecode output and specifies the output connector.

Parameters:

- **ON: OUTRIGHT** – Sends timecode to the attached STAxix's timecode output connection.
- **ON: OUTLEFT** – Sends timecode to the headphone output.
- **OFF** – Timecode is not output.

Remote Control Group ID page

REMOTE CONTROL
GROUP ID=1

Page purpose: This page identifies which IFB100 can remotely control this transmitter.

Parameters: (Valid range: 0 to 99, Value step: 1)

It is highly desirable to have all transmitters and recorders in a given group assigned to the same IFB100.

Remote Control Unit ID page

REMOTE CONTROL
UNIT ID=001

Page purpose: This page maintains the number used to uniquely identify this transmitter.

Parameters:

- (Valid range: 0 to 200, Value step: 1)
- **ALL**

When using the IFB100, this identifier is used to remotely control one specific unit out of the entire group. This information is also useful in Post to identify the unit since it is recorded in the BWF metadata.

Expander page

EXPANDER

Page purpose: This page maintains the info used to expand the transmitter's dynamic range.

Parameters: To enter this page, press the **INC** or **DEC** key, "**PARMS**" is displayed on the right. To move to the next parameter, momentarily press the **MENU** key. To exit this page, press the **MENU** key for 1 second.

PARMS: [OFF] / [ON]

Factory Setting

OFF

RATIO: (Valid range: 1:1.01 to 1:4.00, Value step: 0.01)

1:1.30

THRESH: (Valid range: 0 to -96dB, Value step: 1)

-40dB

REDUCE: (Valid range: 0 to -36dB, Value step: 1)

-6dB

SPEED: [SLOW] / [NORMAL] / [FAST]

SLOW

Dynamics page

DYNAMICS

Page purpose: **ADVANCED USERS ONLY!** This page controls a compressor effect that will decrease the gain during loud passages.

Parameters: To enter this page, press the **INC** or **DEC** key, "**PARMS**" is displayed on the right. To move to the next parameter, momentarily press the **MENU** key. To exit this page, press the **MENU** key for 1 second.

Factory Setting

PARMS: [OFF] / [ON]

OFF

SIDECHAIN: [IN] / [LP1] / [LP2] / [HFB]

IN

Side chain selection. This parameter selects the audio used to control the dynamics, specifically it selects the audio feed to the dynamics peak detector. The options are:

- **HFB:** Input audio to the mic high-passed
- **LP2:** Input audio to the mic low passed more
- **LP1:** Input audio to the mic low passed
- **IN:** Input audio to the mic

Note that this selection does not change the audio that is being processed by the dynamics, rather it changes the audio signal used to determine the level or "loudness" of the audio.

SPEED: [SLOWEST] / [SLOW] / [NORMAL] / [FAST] / [FASTEST]

SLOW

Controls the decay speed of the peak detector used by the dynamics processing.

ATTACK: [SLOWEST] / [SLOW] / [NORMAL] / [FAST] / [FASTEST]

SLOW

Controls the amount of gain slewing which will generally slow the response to attack transients only.

CMP RATIO: (Valid range: 1.0 : 1 to 5.0 : 1, Value step: .1)

3.0 : 1

Compressor ratio. Sets the compressor ratio i.e. 2.0:1 means for every 1 dB above the compressor threshold the gain will be reduced 2 dB.

CMP THRESH: (Valid range: 0 to -96dB, Value step: 1)

-20dB

Compressor threshold. Sets the threshold below which gain reduction occurs according to the compressor ratio setting.

CMP KNEE: (Valid range: 0 to 20dB, Value step: 1)

0dB

Compressor soft knee setting. Sets the "depth" of the compressor's soft knee. A soft knee of 6 dB will result in more gradual gain reduction in the 6 dB range over the compressor's set threshold. Note that settings below 6 dB have very little effect.

EXP RATIO: (Valid range: 1 : 1.00 to 1 : 4.00, Value step: .01)

1 : 1.10

Expander ratio. Sets the expansion ratio i.e. 1:2.0 means for every 1 dB below the expander threshold the gain will be reduced 2 dB.

EXP THRESH: (Valid range: 0 to -96dB, Value step: 1)

-40dB

Expander threshold. Sets the threshold below which gain reduction occurs according to the expander ratio setting.

REDUCE: (Valid range: 0 to -36dB, Value step: 1)

-12dB

Maximum amount of expander gain reduction. Sets an absolute limit on the amount of gain reduction caused by the expander.

GAIN: (Valid range: 0 to 30dB, Value step: 1)

0dB

Make up gain setting. Used to compensate for the gain reduction caused by the action of the compressor.

Dynamics comprises both a compressor and an expander, which operate jointly.

The compressor in Dynamics can perform mild or extreme compression and features a soft knee for more transparent operation. The expander in Dynamics can perform subtle or extreme noise reduction.

Note that the Dynamics processing is done before the existing Expander (which is still functional). Thus, the expander can be used as a stand-alone noise gate while the dynamics can shape the sound as desired.

ADC Location page

ADC : INTERNAL



Page purpose: This page indicates where the analog to digital conversion (ADC) is performed.

Parameters:

- **STA-150** – AD conversion is done in the attached STA-150.
- **STA-100** – AD conversion is done in the attached STA-100.
- **INTERNAL** – AD conversion is done internally for use with the mic input connector.

NOTE: **External** only applies when an STAxix is attached.

Battery Type page

BATTERY TYPE:



NIMH

Page purpose: This page adjusts the algorithm used to display the remaining battery capacity.

Parameters: [LITHIUM] / [ALKALINE] / [NIMH]

Recording Mode page

RECORD MODE:

NON-LOOP RECORD

Page purpose: (Requires RECORDING OPTION) This page maintains the Recording mode.

Parameters:

- **NON-LOOP RECORD** – Once the media has filled up, recording stops and **FULL** is displayed. This prevents over-writing any portion of the audio.
- **LOOP RECORD** – Once the media has filled up, the new audio will begin over-writing the oldest audio on the card.

Audio Transmitter Power page

TX POWER: 10MW

Page purpose: This page is available on hardware after **Serial #2007** and maintains the audio transmitter's output power.

Parameters: [10MW] / [25MW] / [50MW] / [100MW] (100MW is optional)

Use the lowest power setting for a given situation to conserve battery power.

NOTE: there is about a 25% reduction in power consumption between the 50MW and 10MW settings.

Boot Up Mode page

BOOT UP IN
NORMAL MODE

Page purpose: This page maintains whether or not the unit will boot up in Normal or Standby (Low Power) mode.

Parameters:

- **STANDBY** – The unit boots up in Standby mode (a low power state). Press the **MENU** key, to go to full power.
- **NORMAL** – The unit boots up in Normal mode.

Mute Switch Enable page

MUTE SWITCH: (0)
DISABLED

Page purpose: **TRX900 (/AA) ONLY** - This page enables/disables the mute switch ([MSA100](#), purchased separately) and assigns which direction is 'ON'.

Parameters:

- **(0) ENABLED NEGATIVE** – The switch is enabled and its function is reversed.
- **(1) ENABLED POSITIVE** – The switch is enabled in its normal position.
- **(0) DISABLED** – The switch is disabled.

Left/Right Key Assignment page

LR SWITCH MODE:
OFF

Page purpose: This page assigns a button (or buttons) to enable a private line to the Mixer.

Parameters:

- **ON: (ALL KEYS)** – Press any key to activate.
- **ON: DOWN KEY** – Press the **DEC** key to activate.
- **ON: MENU KEY** – Press the **MENU** key to activate.
- **ON: UP KEY** – Press the **INC** key to activate.
- **OFF** – This option is disabled

Normally, in mono mode, the audio is sent to the left channel of a stereo receiver. Pressing the key assigned by this page sends the audio to the right channel only for as long as the key is pressed. In addition, if the individual is listening to the IFB connection, a low frequency tone is added to indicate that they are on the private line.

Track Name page

NAME: FREDERIC
↑

Page purpose: This page maintains the name applied to the MiniSD card and to the audio's metadata.

Parameters: To move to the next character, momentarily press the **MENU** key. To change the designated character position, press the **INC** or **DEC** key. To exit this page, press the **MENU** key for 1 second.

_____ (max: 8 chars, char = 0 to 9, space, A to Z)

The name entered into the transmitter becomes part of the name of the audio files generated by the unit and is also included in the metadata of the BWF file. When powered up, this name appears in the transmitter's screen after several seconds.

To set/change the name, do the following:

1. Press the **INC** or **DEC** key to change the character in the current position.
2. Press the **MENU** key to proceed to the next character.

- When finished, press and hold the **MENU** key to leave this function or cycle the power to resume normal operation.

Security Code page

ID1:000 ID0:000
↑

Page purpose: This page maintains the code used to encrypt the audio transmitted to the receiver.

Parameters: (Valid range: **000** to **FFF**, Value step: **1**)

To move to the next character, momentarily press the **MENU** key. To change the designated character position, press the **INC** or **DEC** key. To exit this page, press the **MENU** key for 1 second.

NOTE: Both of these codes should always be set to **000** for normal un-coded operation.

Security Code Part 1 (ID1) and Security Code Part 0 (ID0)

On this page, 2 three-digit numbers are entered. These two numbers are formed into a single six-digit security code. This code is your security key for this transmitter. An identical code must be entered into the associated receiver for the audio to be properly decoded.

Enabling this function is useful when sensitive information must not be made public. Standard FM wireless transmitters can be picked up using scanners and other electronic devices. Unless a Zaxcom receiver is used, even an uncoded transmitter signal cannot be picked up using a scanner.

The six-digit security code provides a total of 16,777,216 possible choices.

If a Zaxcom receiver has been programmed with a security code, it will also continue to receive an uncoded transmitter (both ID#0 and ID#1 set to 000). Since the receiver has to check for two possible code situations, a slight performance penalty may be incurred during long-range reception. To avoid this, it is highly recommended that both the transmitter and receiver codes be set to 000:000 (uncoded) when high security communication is not required.

Common Transmitter Independent Operations

Display a Detailed Startup Sequence

Press and hold the **DEC** key during power-up.

Detailed Startup Sequence (without any card inserted)

LCD SYNTH AB


PCB REV B	BBBB
VER A-AAA	(CC)

NO CARD

NAME: DDDDDDDD

NAME: AUDIO CC

ZAXCOM	VA-AAA
TRX900	SN:ZZZZZ

581.6 ^{RX}	STOP
	

Detailed Startup Sequence (with a formatted card inserted)

LCD
SYNTH AB

PCB REV B BBBB
VER A-AAA (CC)

FOUND SD CARD
EEEEEEEEEE


NAME:
DDDDDDDD

SIZE LBA 1
SEG F _

FOUND F SEGS
MODE=GGGGGGG

FOUND F SEGS
AUDIO S GGGG

ZAXCOM VA-AAA
TRX900 SN:ZZZZZ

581.6^{??H} STOP


581.6^{RX} REC


Chapter 3 – Recording Audio using the Digital Wireless System Transmitters

The ability to record audio at the transmitter is an optional feature, which must be configured by Zaxcom when purchased. If the necessary configuration steps have not been performed, none of the recording features will be available. It is possible to have this capability added to an existing unit for a nominal charge. Contact Zaxcom for addition information.

Recording Format

The MiniSD card is formatted using the FAT32 file system. While recording, the transmitter places all recorded audio in a single file on the media.

The FAT32 file system can be read on both Windows and Mac OS computers. However, the single file generated by the recorder can only be understood by the [Zaxcom Transfer and Conversion utility](#) {p.68}. It converts the file into a format (Broadcast Wave Format = BWF), that is useable in Post. This utility is available to anyone for free from the Zaxcom website.

Recording Mode

The audio can be recorded in Loop Recording mode or Non-Loop Recording mode.

In **Loop Recording** mode (indicated by **LREC** in the [Pacifier page](#) {p.26}), as the card fills-up, it eventually loops back to the beginning of the card and records over the oldest material. To prevent audio from being erased, do not exceed the recording length of the media (see [Table 3.1 – Available Recording Time](#) {p.40}).

In **Non-Loop Recording** mode (indicated by **REC** in the [Pacifier page](#) {p.26}), as soon as the card is full, recording ceases and the screen displays **FULL**.

Battery Life

While recording audio, a slight decrease in battery life occurs. The battery drains about 5% faster while recording, than a non-recording transmitter. Under typical situations, the unit's battery life will be reduced from approximately 5 hours to 4 hours & 45 minutes.

Media Capacity

You can use MiniSD cards ranging in size from 128 MB to 16 GB. The 16 GB MiniSD card records a single track of audio for 96 hours without erasing any recorded audio on the card. Available recording times are as follows:

MiniSD Size	Available Recording Time
128 MB	45 minutes
256 MB	1.5 hours
512 MB	3 hours
1 GB	6 hours
2 GB	12 hours
4 GB	24 hours
8 GB	48 hours
16 GB	96 hours

Table 3-1 Available Recording Time

IMPORTANT: The unit will **NOT** record onto the card if it was not present when the transmitter was powered up, if it was removed while the power was 'ON' or if the LOW BATTERY page is being displayed. If the card was ejected while the power was 'ON', the card must be reinserted before its power is cycled, in order to resume recording.

Dual Color LED

The dual color LED on top of the unit indicates the recorder's transport status:

Color	Indication
Solid Green	Stop or Playback mode (displays when no card was inserted)
Green and flickers Red	Record mode
Solid Red	Recording connection lost. The card may have been ejected, is full or was not formatted correctly.

Table 3-2 Recorder LED Indications

Transmitter Recording Operation

This section describes the steps necessary to record on the transmitter.

Formatting the MiniSD Card

Many MiniSD cards are sold preformatted; however, you must reformat it in the recorder prior to recording on it. Only cards formatted in the transmitter will work correctly.

To prepare a MiniSD for use, or to erase the contents before reuse, perform the format procedure on the [Media Erase & Format page](#) {p.32}.

Upon completion of the formatting process, the following files remain on the card (example based on a 2GB card):

SN01752	(This folder's name initially defaults to the transmitter's serial #, thereafter it is the Track Name {p.37} entered in the Extended Menu.)
ZBLK0000.ZAX	(size = 1,048,576 KB)
ZBLK0001.ZAX	(size = 932,684 KB)
ZDIR.ZZZ	(size = 538 KB)
DELETE.ME	(size = 512 KB)

The ZBLK****.ZAX files store the recording segments, and the ZDIR.ZZZ file stores metadata about each segment (i.e.: pointer into the .ZAX file, associated start timecode, transmitter name, etc.)

The DELETE.ME file can in fact be deleted. Doing this frees up enough room for a copy of the firmware.

CAUTION: Do not delete any other files from the card. Doing so will prevent it from working correctly. If for some reason you proceed to delete the wrapper files, follow the instructions [To recreate the wrapper files](#) {p.33}.

NOTE: If you move a transmitter to another actor and enter the new actor/character name, the folder name will remain the same and any audio from the new actor will be stored in the same folder. The metadata will contain the correct name.

IMPORTANT: If it is important to you that the Track Name folder is correct, prepare a card for each actor/character and have it follow each actor. This does not eliminate the need to change the track name, so the correct name appears in the metadata.

Current Timecode and Frame-rate Display

The current timecode generator value and frame-rate appear on the [Timecode Frame-rate page](#) {p.28}.

Jamming Timecode into the Transmitter

While the transmitter is being jammed, it identifies the timecode rate and type, and sets itself to that rate.

NOTE: The transmitter's timecode accuracy is approximately 1 frame in 6 hours (1.54 PPM).

Jamming timecode on the transmitter starts a new recording file. The Zaxcom conversion utility starts the transfer and conversion process at the point where the transmitter's timecode was jammed.

NOTE: The transmitter does **NOT** continue to keep timecode when it is powered down. Every time its power is cycled, it will be necessary to jam its TC generator.

Manually Jamming TC with a Cable

Timecode can be jammed into the transmitter by connecting the timecode source to the microphone input or using the stereo adapter. When timecode is connected, it takes the transmitter approximately three (3) seconds to recognize the TC input. The screen display **TIME CODE** followed shortly by **JAMMED** when it is recognized. When the word **JAMMED** disappears, the timecode input source can be disconnected and normal operation can be resumed.

When using the mic input connector with a Mic-level source, the audio level of the timecode needs to be between -30 and -10 dBFS on the transmitter's meter. Any level above -10 may cause clipping, which will prevent proper reading of timecode.

When using the mic input connector with a Line-level source, a Line-level to Mic-level cable should be used to attenuate the timecode signal out of a generator to the correct audio level.

When using the Line-level input connector (STAxXX/TCA100) with a Line-level source, a non-attenuating cable should be used.

In the transmitter {TRX9xx}, (Extended Menu) or recorder {ZFR100}, (Standard Menu):

- a. Set the [Timecode Jam Mode page](#) {p.33} to **Manual**.
- b. Set the [Timecode Source page](#) {p.33} to **SIDE CONNECTOR** or **AUDIO INPUT** (as appropriate).

NOTE: The TRX800 cannot be jammed. Its timecode will **ALWAYS** start at 00:00:00.

Continuously Jamming TC using the IFB100

1. In the transmitter {TRX9xx}, (Extended Menu) or recorder {ZFR100}, (Standard Menu):
 - a. Set the [Timecode Jam Mode page](#) {p.33} to **AUTO-JAM**.
 - b. Set the [Timecode Source page](#) {p.33} to **IFB (RF)**.
2. In the IFB100:
 - a. Connect the TC source to the TC-IN connector.
 - b. Set the [Timecode Jam Mode page](#) {p.33} to **AUTO-LOAD** or **AUTO-JAM**.
 - c. Set the [Timecode Source page](#) {p.33} to **SIDE CONNECTOR**.

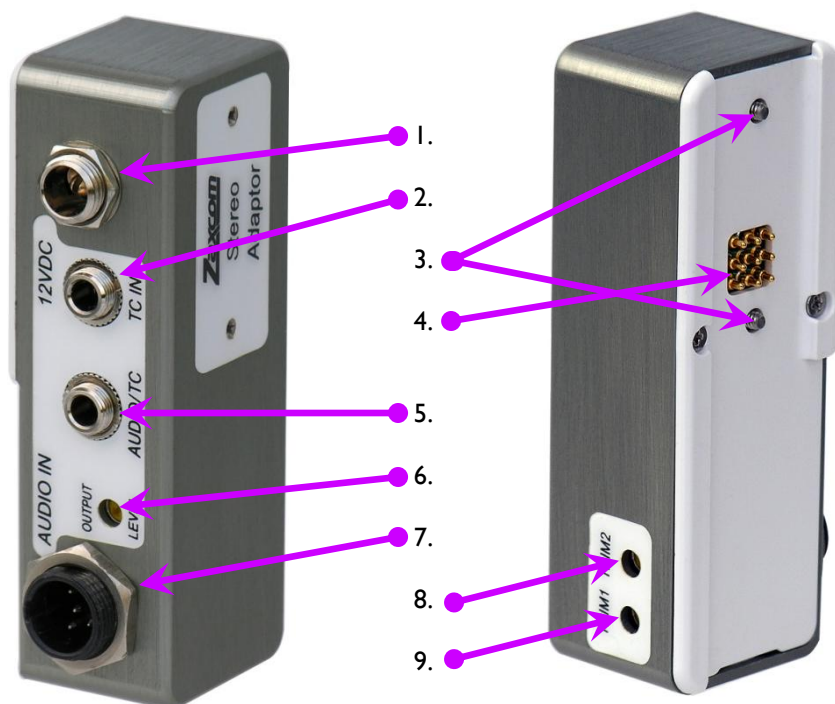
Automatically Starting and Stopping the Recording using Timecode from the IFB100

1. In the transmitter {TRX9xx}, (Extended Menu) or recorder {ZFR100}, (Standard Menu):
 - a. Set the [Timecode Jam Mode page](#) {p.33} to **AUTO-LOAD**.
 - b. Set the [Timecode Source page](#) {p.33} to **IFB (RF)**.
2. In the IFB100:
 - a. Connect the TC source to the TC-IN connector.
 - b. Set the [Timecode Jam Mode page](#) {p.33} to **AUTO-LOAD**.
 - c. Set the [Timecode Source page](#) {p.33} to **SIDE CONNECTOR**.

Chapter 4 – TRX900 (/AA) Adapters

STAI00 Stereo Adapter

The STAI00 allows the unit to transmit and/or record in stereo from a Line-level source. Ideally, it is used to create a stereo hop to a video camera.



- | | |
|--|--------------------------------------|
| 1. Power Connector | 6. Output Level Adjustment |
| 2. Timecode Input Connector | 7. TA-5M Audio Input Connector |
| 3. Screws to Attach to TRX900 (/AA) | 8. Level Trim for Channel #2 (right) |
| 4. Electrical Contacts for TRX900 (/AA) | 9. Level Trim for Channel #1 (left) |
| 5. Audio/Timecode Output Connector | |

Figure 4-1 STAI00 Front & Back Views

Installation

The STAxxx attaches to the TRX900 (/AA) with two screws.

Tighten the two screws, alternating between them, until the adapter and transmitter are tightly connected.

CAUTION: Do not over-tighten the screws.

Connect a Line-level source to the TA-5M connector. The Line-level input needs to be between -6 and +8 dBu.

Adjusting the Input Level

Output tone from a mixer and adjust the 2 input pots so the meter on the LCD screen is at a level of -20 dBFS. The stereo adapter does not have a limiter function so it is important not to overdrive or clip the input of the stereo adapter.

Powering the STAxXX

Connection of 12 VDC power to the stereo adapter is optional. If no power source is connected to the STAxXX, it operates from the transmitter's internal battery.

Using an External Power Source

When the 12 VDC input is connected to a power source, it supplies power to the transmitter when its power switch is in the 'OFF' position.

If batteries are installed in the transmitter and external power is connected, the unit will not be able to power down unless an external power switch is available to remove the external power.

Using the STAxXX to Power the Transmitter

The adapter can be used to power the transmitter while it is in Mono mode and using a Mic-level input.

The Audio/Timecode Output Connection

The audio output connection is used to monitor the audio functions of its host unit or to allow timecode to pass through the STAxXX. The transmitter's output setting ([Timecode Output Enable page](#) {p.34}) determines if audio or timecode is sent through the output.

Timecode Input

The timecode input is used to jam the transmitter's timecode generator. If the auto-load function ([Timecode Jam Mode page](#) {p.33}) is enabled, the timecode input of the stereo adapter can be used.

Operation of the STAxXX

For the stereo adapter to operate, the transmitter must select the stereo setting ([Audio Transmission Format page](#) {p.31}) and external ADC ([ADC Location page](#) {p.36}) must be selected.

Host Unit functions

Selecting the stereo setting causes the transmitter to combine the two input signals together and transmit them on one frequency. The ADC selection: **INTERNAL** – selects the internal mic input, **EXTERNAL** – selects the stereo adapter audio.



Figure 4-2 STA100 attached to TRX900AA

STA150 Stereo Adapter



Figure 4-3 STA150 & STA150 attached to TRX900AA

The STA150 is based on the STA100. The difference is the cables exit from the side, instead of out of the back.

EA100 Earpiece Adapter



Figure 4-4 EA100 & EA100 attached to TRX900

The EA100 is used for monitoring audio (IFB or from the recording) when attached to the side of a TRX900 (/AA).

TCA100 Timecode Adapter

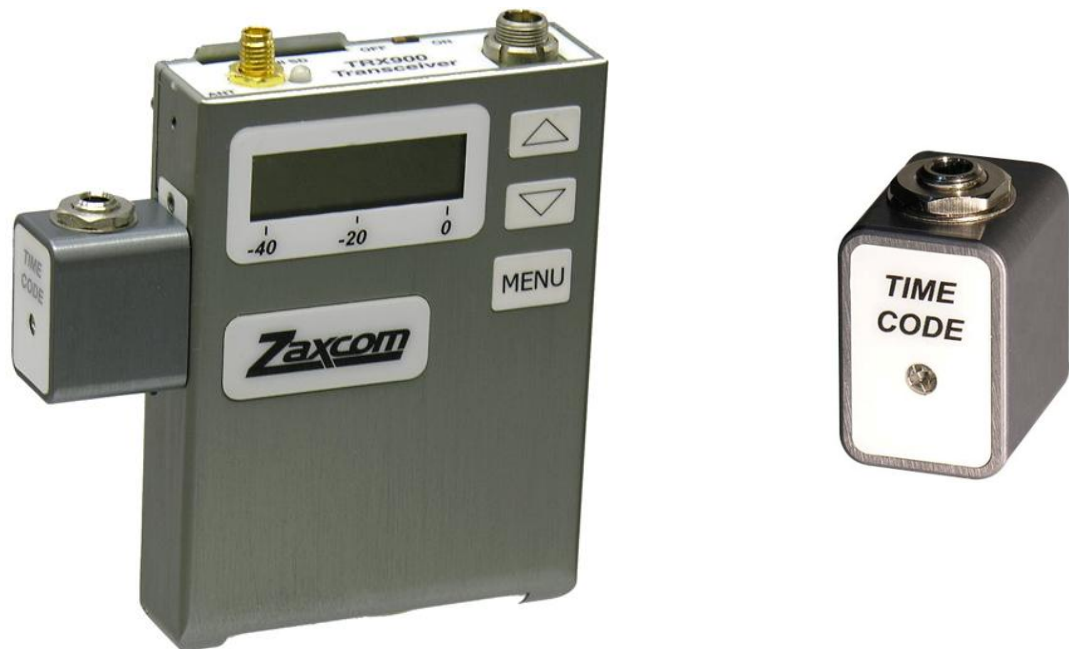


Figure 4-5 TCA100 attached to TRX900AA & TCA100

The TCA100 timecode adaptor provides a dedicated timecode input to the TRX900 (/AA) and ZFR100. This is especially helpful for using the auto-load feature manually (without the IFB100).

MSA100 Mute Switch



Figure 4-6 MSA100 Mute Switch Adapter attached to TRX900AA & MSA100 Mute Switch Adapter

This Adapter, in concert with the [Mute Switch Enable page](#) {p.37}, allows Talent to turn 'OFF' the mic for Privacy.

Chapter 5 – Digital Wireless System Receivers

This section is intended to quickly familiarize you with the functions of each of the Digital Wireless System receivers and was written based on firmware version 8.83.

Getting to Know Your RX900 (M/S) ENG Diversity Receiver

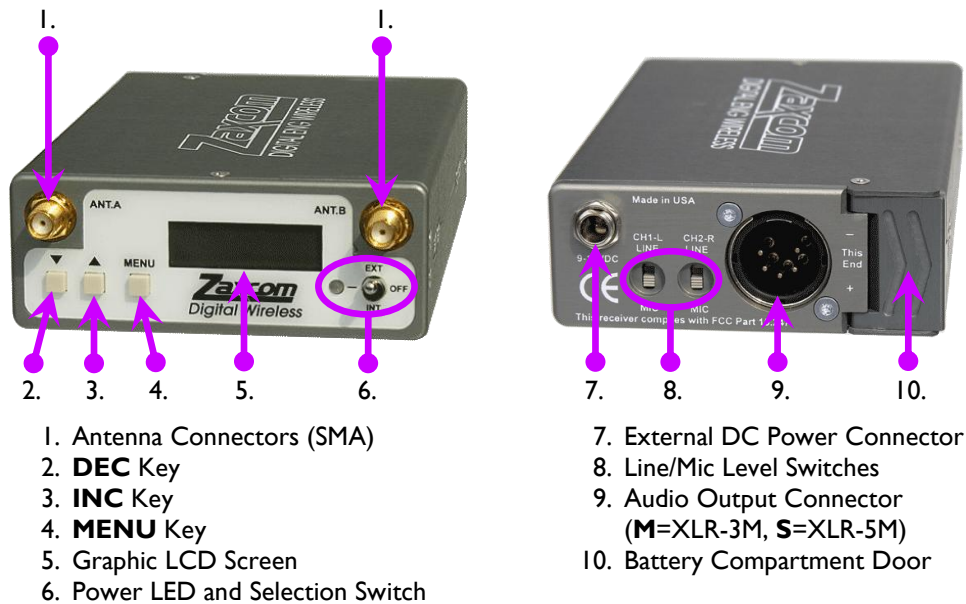


Figure 5-1 RX900 (M/S) Front & RX900 (S) Rear Views

Powering the Receiver

The ENG Diversity Receiver can be powered by batteries installed in the unit or using an external 9 to 18 VDC source.

Use the front panel power switch to select: internal power, external power or no power.

Internal Batteries

Four AA batteries are used to power the receiver. Use either Lithium or Nickel Metal Hydride (NiMH) AA batteries. While alkaline batteries may be used, they will only power the unit for a short time (~30 to 60 minutes). NiMHs will last up to 6 hours, while Lithiums will last about 10 hours.

To use internal batteries, set the power switch to the **INT** position.

The 4 AA batteries are accessed by pressing on the battery door while sliding the door away from the center of the unit.

External Power Source

An external 12 VDC source can be used to power the receiver for an extended time. Set the front panel power switch to the **EXT** position while using an external power source. The receiver does not automatically switch to an internal power source if the external power source is lost. You must manually change the front panel power switch from **EXT** to **INT**, to power the unit from the internal AA batteries.

The receiver external power can range from 9 to 18 VDC. However, if the voltage drops below 10 VDC, the audio quality will degrade.

Connections

This section describes the physical connectors on the receiver. The power connector was described in the previous section.

Audio Output Connector

The XLR connector provides the receiver's output. A stereo receiver has an XLR-5M connector; the mono receiver has an XLR-3M connector. You can select either Line-level or Mic-level output using the switches on the rear of the receiver. In the **MIC** position, the output level is -42 dB. In the **LINE** position, the output level is -2 dB. There is 20 dB of system headroom.

Pin	Mono	Stereo
1	Ground	Ground
2	Mono +	Left Channel +
3	Mono -	Left Channel -
4		Right Channel +
5		Right Channel -

Table 5-1 RX900 (M/S) Audio Pin-outs

Antenna Connectors

The front of the receiver has two SMA connectors, intended to connect to external 50-ohm log-periodic ("Shark-fin") or whip antennas. For best performance, keep any transmitters at least 3 feet (1 meter) away from the antennas. This is because strong radio frequency sources reduce the receiver's sensitivity. The receiver is optimized for properly tuned external log-periodic antennas. When whip antennas are used, there is a noticeable reduction in the receiver's range. You should periodically check that the connector is still securely tightened.

RX900 (M/S) Configuration Menus

There are four **Standard**, thirteen **Extended** and eighteen **Test** menu pages, as follows:

Standard Menu	Extended Menu	Test Menu
Pacifier page {p.52}	Pacifier page {p.52}	Pacifier page {p.52}
Audio Rx Freq Select page {p.52}	Audio Rx Freq Select page {p.52}	Audio Rx Freq Select page {p.52}
Audio Rx Freq Scan page {p.53}	Audio Rx Freq Scan page {p.53}	Audio Rx Freq Scan page {p.53}
Test Tone page {p.54}	Test Tone page {p.54}	Test Tone page {p.54}
	Backlight On/Off page {p.54}	Backlight On/Off page {p.54}
	Power Saver Enable page {p.54}	Power Saver Enable page {p.54}
	Audio Reception Format page {p.54}	Audio Reception Format page {p.54}
	Security Code Part 0 page {p.55}	Security Code Part 0 page {p.55}
	Security Code Part 1 page {p.55}	Security Code Part 1 page {p.55}
	RS-485 Unit ID page {p.56}	RS-485 Unit ID page {p.56}
	RS-485 Comm. Spd page {p.56}	RS-485 Comm. Spd page {p.56}
	Left/Right Switch page {p.56}	Left/Right Switch page {p.56}
	Preset Freq pages {p.56}	Preset Freq pages {p.56}
		Security Enable page {p.57}
		Ant Signal Strength page {p.57}
		VCO page {p.57}
		Recep Error Counters page {p.57}
		Signal Reception Quality page {p.57}

Table 5-2 RX900 (M/S) Receiver Standard, Extended & Test Menus

Each time the **MENU** key is pressed, the menu advances to the next page, in sequence.

Getting to Know Your RX4900 Diversity Receiver

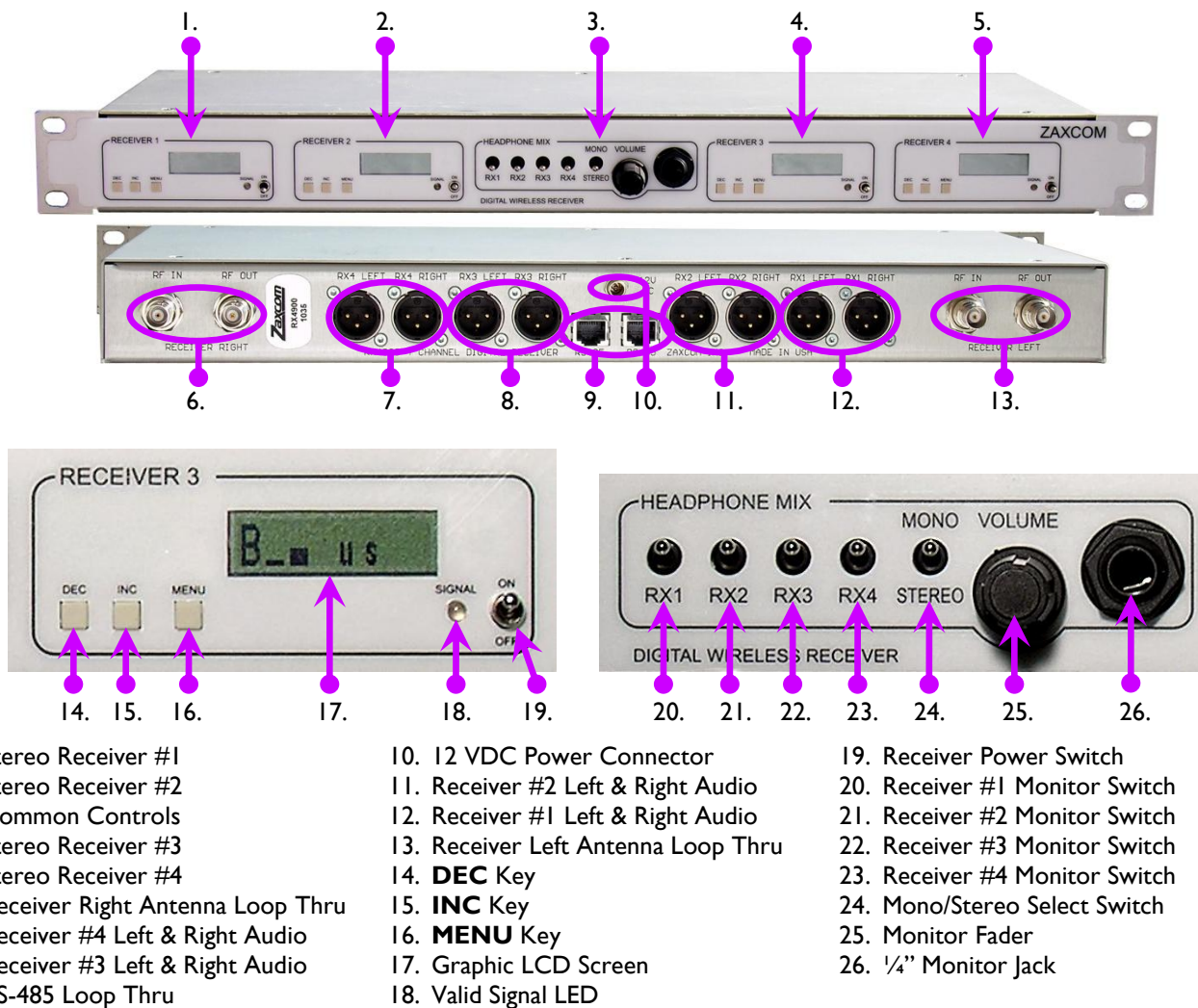


Figure 5-2 RX4900 Front, Rear, Receiver & Monitor Controls Views

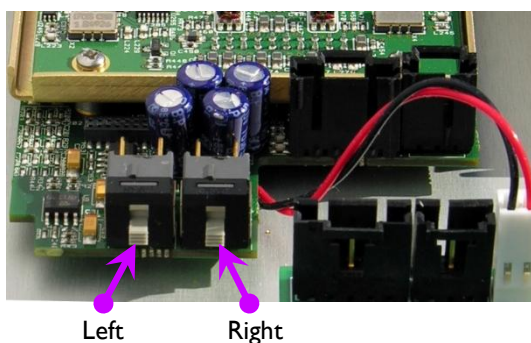


Figure 5-3 RX4900 Interior – Mic/Line output level switches

IMPORTANT: Be sure to match the audio output level of your RX4900 receivers with the appropriate input level of downstream equipment. UP is Line-level, DOWN is Mic-level. They are located inside the case, near the XLR-3M connector. One pair is next to each receiver. To access them, remove the screws on top and bottom, on the left and right sides. The unit is normally sold with all outputs set to Line-level.

Powering the Receiver

An external 12 VDC source can be used to power the receiver. This power source can range from 9 to 18 VDC. However, if the voltage drops below 10 VDC, the audio quality will degrade.

Connections

This section describes the physical connectors on the receiver.

Audio Output Connector

The XLR-3M connector provides the receiver's output. Each receiver has two, one for each channel, and they output at Line-level (+4 dBm). There is 20 dB of system headroom.

Pin	Function
1	Ground
2	Signal +
3	Signal –

Table 5-3 RX4900 Receiver Audio Pin-outs

Antenna Connectors

The rear of each receiver has two BNC connectors, intended to connect to external 50-ohm log-periodic ("Shark-fin") or whip antennas. For best performance, keep any transmitters at least 3 feet (1 meter) from the antennas. This is because strong radio frequency sources reduce the receiver's sensitivity. The receiver is optimized for properly tuned external log-periodic antennas. When whip antennas are used, there is a noticeable reduction in the receiver's range. You should periodically check that the connector is still securely tightened.

RS-485 Connectors

This connector is used by ZedAlpha to monitor the transmitter and receiver status.

Pin	Function
1	+ RS485
2	- RS485
3	GND
4	N/C
5	N/C
6	N/C
7	N/C
8	N/C

Table 5-4 RX4900 RS-485 Pin-outs (RJ-45)

RX4900 Configuration Menus

There are four **Standard**, thirteen **Extended** and eighteen **Test** menu pages, as follows:

Standard Menu	Extended Menu	Test Menu
Pacifier page {p.52}	Pacifier page {p.52}	Pacifier page {p.52}
Audio Rx Freq Select page {p.52}	Audio Rx Freq Select page {p.52}	Audio Rx Freq Select page {p.52}
Audio Rx Freq Scan page {p.53}	Audio Rx Freq Scan page {p.53}	Audio Rx Freq Scan page {p.53}
Test Tone page {p.54}	Test Tone page {p.54}	Test Tone page {p.54}
	Backlight On/Off page {p.54}	Backlight On/Off page {p.54}
	Power Saver Enable page {p.54}	Power Saver Enable page {p.54}
	Audio Reception Format page {p.54}	Audio Reception Format page {p.54}
	Security Code Part 0 page {p.55}	Security Code Part 0 page {p.55}
	Security Code Part 1 page {p.55}	Security Code Part 1 page {p.55}
	RS-485 Unit ID page {p.56}	RS-485 Unit ID page {p.56}
	RS-485 Comm. Spd page {p.56}	RS-485 Comm. Spd page {p.56}
	Left/Right Switch page {p.56}	Left/Right Switch page {p.56}
	Preset Freq pages {p.56}	Preset Freq pages {p.56}
		Security Enable page {p.57}
		Ant Signal Strength page {p.57}
		VCO page {p.57}
		Recep Error Counters page {p.57}
		Signal Reception Quality page {p.57}

Table 5-5 RX4900 Receiver Standard, Extended & Test Menus

Each time the **MENU** key is pressed, the menu advances to the next page, in sequence.

Common Receiver Standard Menu

Pacifier page



Page purpose: When you power up the unit, this page appears and displays the following information:

- antenna being used,
- transmitter limiter status
- transmitter recorder status
- signal strength,
- receiver reception format
- transmitter battery capacity
- audio level
- receiver battery capacity

Parameters:

Character 1 – Antenna

Displays which antenna is being used. This character is always either an **A** or **B**.

Characters 2 and 3 – Signal Strength

Two vertical bar graphs are displayed representing the signal strength at the antennas. A strong RF input level is shown using a checkered pattern. This is the ideal signal strength.

Character 4 – Audio Level

When this character turns into a checkered pattern, the transmitter's limiter is engaging due to excessive audio input levels. If this occurs, reduce the audio gain on the transmitter. This ensures the highest level of unprocessed audio quality.

Characters 5 and 6 – Receiver Information

The meaning of these characters changes based on when you look at them. If you turn 'ON' the receiver after the transmitter, it will display the Reception Format for about one second before it starts displaying the Receiver's Battery Level. At all other times, only the Receiver's Battery Level is displayed.

Reception Format

- **us** – US mono format #0
- **eu** – European narrow-band format #1
- **st** – US stereo format #2

Receiver Battery Level

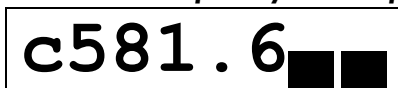
This ranges from **R9** down to **R0**. When the level reaches **R0**, the receiver has only a few minutes before its battery is depleted.

Characters 7 and 8 – Transmitter Information

Character 7 indicates the recording status of the transmitter (**R** or **S**). **R** means it is recording and **S** means it is not recording (stopped).

Character 8 indicates the transmitter battery's level of charge and ranges from **9** to **0**. When the level reaches **0**, the transmitter has, at most, only a few minutes before its battery will be depleted.

Audio Receiver Frequency Select page



Page purpose: This page maintains the audio receiver's frequency (MHz).

Parameters:

Character 1 – Valid Signal

Changes from **c** to **C** when it receives a valid signal.

Characters 2 to 6 – Receiver Frequency

(Valid range: (see [Table 1.4](#) {p.14}), Value step: .1) These characters display the currently selected frequency in MHz. Use the **INC** or **DEC** key to change this frequency.

Characters 7 & 8 – Signal Strength

These vertical bar graphs indicate the signal strength at the left and right antennas.

Audio Receiver Frequency Scan page

Scan5816

Page purpose: This page allows you to scan an entire block of channels and quickly choose the quietest channel to use.

Parameters:

The screen initially displays **Scan1234**, where **1234** is the currently selected frequency (xxx.x MHz).

Starting a Scan

Press the **INC** key to start a scan. The receiver searches every possible channel.

A full scan takes about 10 seconds and the receiver displays the quietest frequency once the scan has completed.

Accepting the Frequency

Press the **DEC** key to load the selected frequency into the receiver.

Discarding the Frequency

Press the **MENU** key to discard the selected frequency. The receiver exits to the [Pacifier page](#) {p.52} after discarding the frequency.

Blocking Frequencies with RF Interference

Press the **INC** key to restart the scan. However, when the scan restarts, instead of performing an entirely new scan, it averages the current and previous scans. Frequencies that are temporarily occupied are remembered in the final selection, allowing the receiver to block frequencies that contain intermittent RF interference.

Starting a New Scan

Repeatedly press the **MENU** key until you have stepped all the way around the menu back to the [Audio Receiver Frequency Scan page](#) {p.53}.

Best Practice: Scanning for a Low Noise Frequency

The easiest way to remember the proper way to scan is to push the keys from right to left:

1. Repeatedly press the **MENU** key until **SCAN** is displayed.
2. Press the **INC** key to start the scanning process. Ensure the transmitter is 'OFF' before starting the scan.
3. Press the **DEC** key to load the selected frequency into the receiver. The menu advances to the next item.

Best Practice: Finding the Quietest Frequencies for Multiple Transmitters

1. Turn all transmitters 'OFF' and perform a couple of scans.
2. Accept the quiet channel by pressing the **DEC** key.
3. Turn 'ON' the first transmitter and tune it to this channel.
4. Place the transmitter at least 20 feet (6 meters) away from the scanning receiver.
5. Using the next receiver, perform another pair of scans.
6. Repeat steps 2 thru 5 for each addition transmitter/receiver pair.

NOTE: At any time in this page, the **MENU** key may be pressed to exit. This will also clear out any change and revert to the previous selection.

Since the most recently selected frequency is now occupied, the next receiver to perform a scan finds the next quietest frequency. Repeat this procedure for each additional transmitter. This procedure assumes that all of the transmitters will be operating in the same block.

Test Tone page

Tone=Off

Page purpose: This page allows the operator to generate a 1 kHz test tone.

Parameters: [Off] / [0dB] / [+20]

The tone amplitude is +0 dB. This is -20 dBFS. However, you can change the tone amplitude using the **INC** and **DEC** keys.

When you exit this page, the tone is automatically disabled.

Common Receiver Extended Menu**Entering Extended Menu**

1. Power down the receiver.
2. Hold down the **MENU** key while powering it up.

The following items appear after the items in the **Standard** menu.

Exiting the Extended Menu

Cycle the power.

Backlight On/Off page

Lite:Off

Page purpose: This page controls the display's backlight.

Parameters: [Off] / [On]

Power Saver Enable page

PsaveOff

Page purpose: This page enables/disables Power Saver mode.

Parameters: [Off] / [On]

The receiver draws .2 A at 12 VDC, so it must dissipate 2.4 watts of heat. It must have some ventilation even at this low level. When using multiple receivers in a sound bag without ventilation, you may encounter issues in high ambient temperatures.

If you encounter an issue with heat dissipation, you can use the receiver's Power Saver mode. This mode does not affect the receiver's operation; however, it does reduce power consumption and heat dissipation by 25%. The receiver is 10% more power efficient when running from 12 VDC external power. When possible, external power is the best choice.

Audio Reception Format page

Form0=US

Page purpose: This page maintains the current Reception Format selection.

Parameters:

- **2=ST** – US Stereo mode (matches up with **STEREO** on the transmitter).
- **1=EU** – European mode (matches up with **EUROPEAN** on the transmitter).
- **0=US** – US Mono mode (matches up with **US MONO** and **US MONO-R** on the transmitter).

If the Reception Format here and the Transmission Format on the associated transmitter do not match, the receiver will be unable to decode the audio from the associated transmitter.

NOTE: When you change modes, you **MUST** power cycle the unit before the change takes effect.

Security Code Part 0 page

ID0=000

Page purpose: This page maintains the right half of the security code.

Parameters: (Valid range: **000** to **FFF**, Value step: **1**)

To make changing this number faster, press and hold the **DEC** key and repeatedly press the **INC** key to increment the left most digit.

NOTE: This code **MUST** be identical to that used in the associated transmitter.

This three-digit number and the one entered in the **Security Code Part 1 page** are formed into a single six-digit security code. This code is your security key for this receiver. An identical code must be entered into the associated transmitter for the audio to be properly decoded.

Enabling this function is useful when sensitive information must not be made public. Standard FM wireless transmitters can be picked up using scanners and other electronic devices. Unless a Zaxcom receiver is used, even an uncoded transmitter signal cannot be picked up using a scanner.

The six-digit security code provides a total of 16,777,216 possible choices.

If a Zaxcom receiver has been programmed with a security code, it will also continue to receive an uncoded transmitter (both ID#0 and ID#1 set to 000). Since the receiver has to check for two possible code situations, a slight performance penalty may be incurred during long-range reception. To avoid this, it is highly recommended that both the transmitter and receiver codes be set to 000:000 (uncoded) when high security communication is not required.

Security Code Part 1 page

ID1=000

Page purpose: This page maintains the left half of the security code.

Parameters: (Valid range: **000** to **FFF**, Value step: **1**)

NOTE: This code **MUST** be identical to that used in the associated transmitter.

This three-digit number and the one entered in the **Security Code Part 0 page** are formed into a single six-digit security code. This code is your security key for this receiver. An identical code must be entered into the associated transmitter for the audio to be properly decoded.

Enabling this function is useful when sensitive information must not be made public. Standard FM wireless transmitters can be picked up using scanners and other electronic devices. Unless a Zaxcom receiver is used, even an uncoded transmitter signal cannot be picked up using a scanner.

The six-digit security code provides a total of 16,777,216 possible choices.

If a Zaxcom receiver has been programmed with a security code, it will also continue to receive an uncoded transmitter (both ID#0 and ID#1 set to 000). Since the receiver has to check for two possible code situations, a slight performance penalty may be incurred during long-range reception. To avoid this, it is highly recommended that both the transmitter and receiver codes be set to 000:000 (uncoded) when high security communication is not required.

RS-485 Unit ID page

RxNum=01

Page purpose: This page maintains the number used to uniquely identify this receiver.

Parameters: (Valid range: 0 to 99, Value step: 1)

This identifier is used by a 3rd party program called ZedAlpha (<http://www.orbitalsound.co.uk>). This program can monitor each receiver using RS-485 commands.

RS-485 Communication Speed page

BAUD 192

Page purpose: This page controls how fast the RS-485 signals are transferred.

Parameters:

- **192** – 19,200 bps
- **384** – 38,400 bps

384 is a little unreliable; always use 192.

Left/Right Switch page

LRSW:Off

Page purpose: This page enables/disables output switching when used with the private line communications feature of the TRX9xx & TRX800.

Parameters:

- **On** – when the button is not pressed the output will appear on the left channel and when the button is pressed the audio is appears on the right channel.
- **Off** – whether or not the button on the transmitter is pressed, the receiver will output the same audio on both channels from the transmitter.

This function will not work while the unit is in stereo.

Preset Frequency pages (# = 0 to 9)

p# 560.0

Page purpose: Use these pages to store frequently used frequencies.

Parameters:

Character 1 – Valid Signal

Changes from **p** to **P** when it receives a valid signal.

Character 2 – Preset Identifier

(Valid range: 0 to 9, Value step: 1) identifies the preset storage.

Character 4 to 8 – Receiver Frequency

(Valid range: (see [Table I.4](#) {p.14}), Value step: .1) These characters display the currently selected frequency in MHz. Use the **INC** or **DEC** key to change this frequency.

Between these pages, 10 frequencies can be stored. They appear before the lowest frequency on the [Audio Receiver Frequency Select page](#) {p.52}.

Common Receiver Test Menu

Entering the Test Menu

1. Power down the receiver.
2. Hold down the **INC** & **DEC** keys while powering it up.

The following items appear after the items in the **Extended** menu.

Exiting the Test Menu

Cycle the power.

Security Enable page

SecurOff

Page purpose: This page enables/disables the automatic creation of a random security code every time it boots up.

Parameters: [Off] / [On]

This prevents the user from having to make one up every time (if the user wants a really secure wireless system). The user has to program this code into the associated transmitter. As always, the receiver will continue to work with a transmitter that is set to 000:000.

Antenna Signal Strength page

a00 b00

Page purpose: This page is used to diagnose antenna connection problems.

It displays the signal strength of each antenna in dB. Under normal circumstances, they should be approximately the same number.

VCO page

vco1.60v

Page purpose: This page is used to tune and debug the receiver's RF voltage controlled oscillator.

It should be about 1.5 volts while receiving a valid signal. The meter's range is 0 to 3.3 volts.

Reception Error Counters page

Ea000000

Page purpose: This page displays the reception error counters.

The first three digits are the errors detected from antenna A; the last 3 digits are those from antenna B. The single letter (character #2) increments every time both channel A and channel B have an error on the same block of audio. If the letter increments, both channels had a problem with that block and the audio was received damaged. If the letter does not increment, the audio is being received without errors.

Signal Reception Quality page

s77■■v00

Page purpose: This page displays how well the signal is being received.

The first two numbers represent the signal quality for channels A & B, as do the 2 meters. The letter "V" cycles through the alphabet whenever an uncorrectable audio error has occurred. The other 2 digits each increment when an error has occurred on channel A or B respectively.

Chapter 6 – IFB100 IFB Transmitter

This chapter is intended to quickly familiarize you with the functions of the Zaxcom IFB100 IFB transmitter and was written based on firmware version 6.08.

Getting to Know Your IFB Transmitter

It is a 100 mW RF transmitter designed to be used with the Zaxcom Digital wireless system. The IFB100 uses a digital spread spectrum signal to send and receive IFB audio, timecode and remote control signals. By using spread spectrum technology, the IFB is immune to interference. IFB audio has a range of approximately 150 feet, timecode and remote control commands have a range of approximately 500 feet.

In locations where multiple IFB100 units are used, you can set each TRX9xx or ZFR100 to a specific IFB100 unit.

The IFB100 contains a simple menu driven interface with minimal physical keys and connectors.

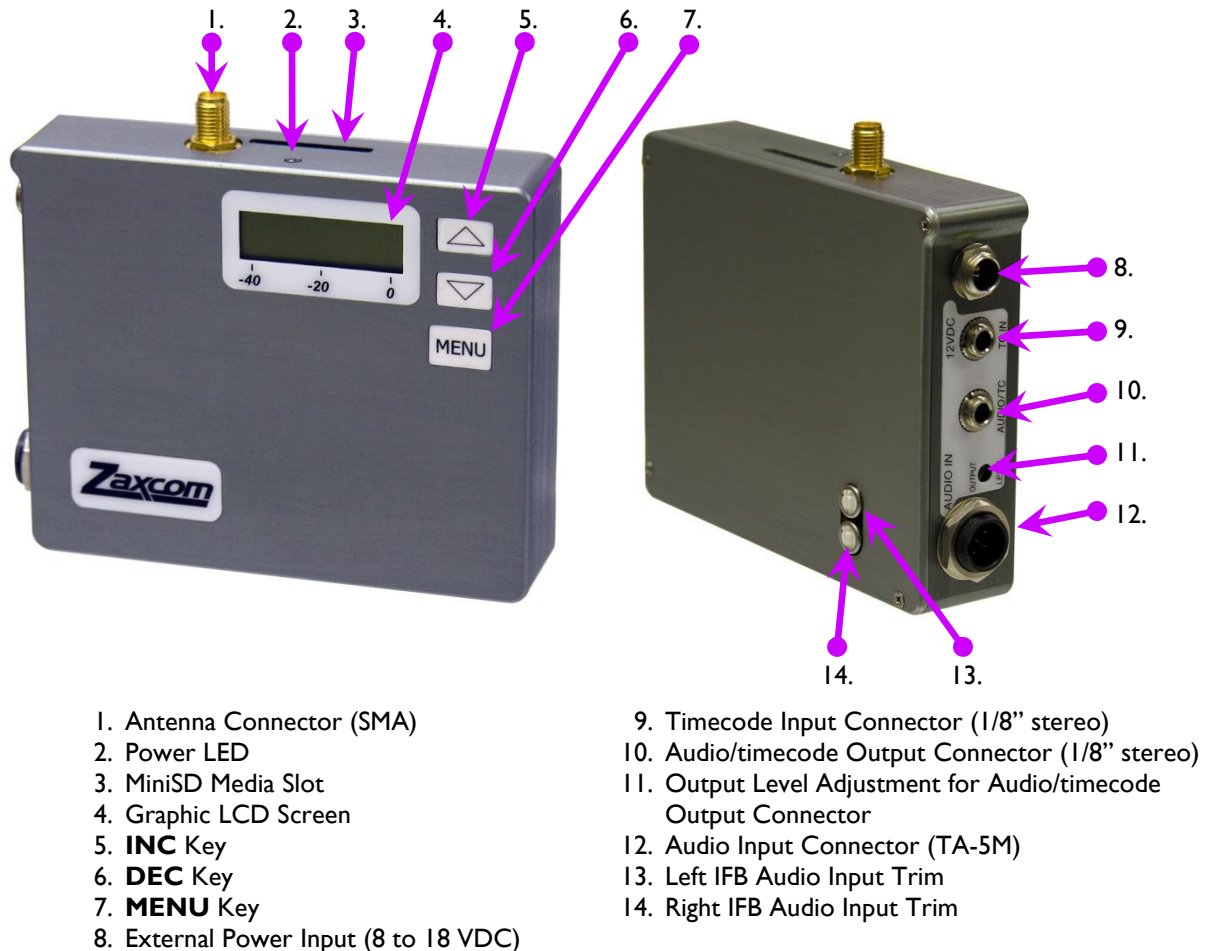


Figure 6-1 IFB100 Front & Side Views

Setting Up the IFB100

This section describes setting up the IFB100 for the first time.

Power Requirements

The IFB100 requires an external power source (8 to 18 VDC). Ideally, the source should be 12 VDC. Normal current draw is 125 mA at 12 VDC but a power supply needs to be capable of supplying at least 1 amp.

Audio Input

The two channel balanced audio input on the IFB100 has a TA-5M connector. The input audio range is -8 dBu to +4 dBu. You can configure the IFB100 to transmit a single channel or a mix of the two input channels.

IMPORTANT: When using the IFB100 for IFB audio transmission, an external 2.4 GHz antenna is strongly recommended. When using the supplied antenna directly mounted to the transmitter, it is possible the RF signal will interfere with the audio connected to it. The result being a 1kHz tone added to the audio being sent out. The supplied antenna is recommended for timecode and remote control transmission only.

Adjusting the Input Audio Level

The input audio level is preset by Zaxcom at +4 dBu. However, this level can be adjusted using the trim pots located on the outside of the unit. See the Side View in [Fig 6-1](#) {p.58}.

Timecode

Unless an external timecode source is present, the IFB100 outputs free-run timecode. When connected to an external timecode source, the timecode generator syncs with it.

IMPORTANT: A stereo plug is required for external timecode sync. Do **NOT** connect to the ring on the plug. **You cannot use a mono plug.** A mono plug will not destroy any components but it will short out the signal.

IFB100 Configuration Menus

The IFB100 uses a series of menus for configuration. These menus are similar to other Zaxcom wireless devices and behave in a similar fashion.

There are nine **Standard** and thirteen **Extended** menu pages, as follows:

Standard Menu	Extended Menu
Pacifier page {p.60}	Highpass Filter page {p.63}
Remote Audio Gain page {p.60}	Limiter page {p.63}
Remote Unit ID page {p.60}	IFB Format page {p.63}
Remote Audio Freq Chg page {p.61}	IFB Frequency page {p.63}
Remote Power Setting page {p.61}	Power-up Mode page {p.64}
Timecode Frame-rate page {p.61}	Timecode Jam Mode page {p.64}
IFB Frequency page {p.62}	Timecode Source page {p.64}
IFB Input Mix page {p.62}	Timecode Output Enable page {p.64}
Lock page {p.62}	Remote Control Group ID page {p.65}
	Remote Control Unit ID page {p.65}
	IFB Tx Power page {p.65}
	TV Channel Minimum page {p.65}
	TV Channel Maximum page {p.65}

Table 6-1 IFB100 Standard, Extended & Factory Setup Menus

Each time the **MENU** key is pressed, the menu advances to the next page, in sequence.

IFB100 Standard Menu

Pacifier page

2.403	----
2.403	STOP

Page purpose: When you power up the unit, this page appears and displays the following information:

- Transmitter frequency,
- Audio level meter,
- Status of the IFB100 transport remote control.

NOTE: For diagnostic purposes, you can press the **INC** or **DEC** key to read the Motherboard supply voltage.

Remotely Starting and Stopping the Transmitter Recorder

While in this page, pressing the **INC** or **DEC** key sends a Record or Stop command to all TRX9xx/ZFR100 units in the same group as the IFB100.

When setting the IFB input audio level, normal conversation should be around -20 dB.

Remote Audio Gain Change page

REMOTE GAIN
GROUP01 UNIT=ALL

Page purpose: This page allows you to adjust the audio gain on the specified TRX9xx/ZFR100.

Pressing **INC** displays “+ +” and transmits a command to increase the gain setting, pressing **DEC** displays “--” and transmits a command to decrease the gain setting. Monitor the audio coming from the TRX9xx unit being adjusted to verify the gain setting change. The Remote Unit ID page can be set to ALL or a specific unit.

NOTE: If the TRX9xx/ZFR100 is not in range of the IFB or is on the fringe of coverage, the gain control command may have to be repeated.

IMPORTANT: Each time gain is increased or decreased, the level changes by 2 dB. The change **IS** noticeable if it is done while talent is speaking. Wait until talent has stopped talking before changing the level.

Remote Unit ID page

REMOTE CONTROL
UNIT ID=ALL

Page purpose: This page sets the unit you control when you use any of the remote control settings.

Parameters:

- (Valid range: 0 to 200, Value step: 1)
- **ALL**

Remote Audio Frequency Change page

```
REMOTE CH 512.0 *
UNIT ID=1 000
```

```
TX CH WARNING
UNIT ID = ALL
```

Page purpose: This page sets the transmit frequency for the specified TRX9xx.

Parameters: (Valid range: (see [Table 1.4](#) {p.14}), Value step: .1) The frequency range is based on the frequency range selected in [TV Channel Minimum page](#) {p.65} and [TV Channel Maximum page](#) {p.65}.

The top example is what you should normally see. The bottom example is what you see if you have selected the ALL choice for Unit Code. Since it's a really BAD idea to command all transmitters to start using the same frequency, this warning basically reminds you to choose a specific transmitter.

While you are changing the frequency on the display, the command is not sent to the selected TRX9xx transmitter until you stop on a specific frequency for longer then 1.5 sec. This prevents the TRX9xx unit from transmitting on all channels between the old and new frequencies. The transmit counter, bottom line right three digits, will increment and an asterisk (*) will blink, for each message sent (several will be sent each time you press the **INC** or **DEC** button). If you are at the extreme edge of your range, you may need to take additional actions to get the change to take place (i.e. re-orient your antenna, have talent move closer, etc.).

Remote Power Setting Change page

```
REMOTE POWERMODE
0: POWER=ON
```

Page purpose: This page sets the power setting used by the specified TRX9xx.

Parameters:

- **6: POWER=LOW2** – Disables the RF Power Amplifier, RF Board and Mic Pre-amp. In most cases, you want to use **LOW2** if you are using the remote power setting. When using the **LOW2** setting, the TRX9xx draws half the current as the full power setting, saving battery life.
- **5: POWER=LOW1** – Disables the RF Power Amplifier in remote units.
- **4: POWER=ON** – Filler to prevent accidentally turning 'OFF' the remote unit's power.
- **3: POWER=ON** – Filler to prevent accidentally turning 'OFF' the remote unit's power.
- **2: POWER=ON** – Filler to prevent accidentally turning 'OFF' the remote unit's power.
- **1: POWER=ON** – Filler to prevent accidentally turning 'OFF' the remote unit's power.
- **0: POWER=ON** – Turns the remote unit's power fully 'ON'.

NOTE: If the TRX9xx is not in range of the IFB or is on the fringe of coverage, the power setting command may have to be repeated.

Timecode Frame-rate page

```
TIMECODE 30NDF
GEN 00:00:00:00
```

Page purpose: This page sets the frame-rate to be transmitted with the timecode.

Parameters: [23.98] / [24] / [25] / [29.97NDF] / [29.97DF] / [30NDF] / [30DF]

The IFB100's timecode generator is in Free-Run mode unless it is connected to a timecode source.

If an external timecode source is connected, the IFB100's internal timecode generator stays in sync with it. If a TRX9xx/ZFR100 is in Autoload mode, starting and stopping recording is controlled by the external source.

IFB Frequency page

IFB FREQ: 2.403

Page purpose: This page sets the IFB transmitter's center frequency.

Parameters: (Valid range: 2.403 to 2.475 GHz, Value step: .001)

The IFB100 should be adjusted with a **minimum** 2 MHz separation between channels. However, 8 MHz separation between channels is necessary when using the Zaxcom Voting System (ZVS).

If the ZVS is enabled, you need to allocate four adjacent channels, 2 MHz apart, for the IFB100s. For example, the ZVS would use 2.403 GHz, 2.405 GHz, 2.407 GHz and 2.409 GHz. This makes 2.411 GHz the next channel available for another ZVS group.

Using 2 MHz spacing, the IFB100 can simultaneously support 36 IFB channels.

Selecting the frequency

If interference is encountered, the range of the system is affected. If the range is less than 150 ft., go to a different channel at least 30 MHz away from the interfered channel.

There are many devices that use the 2.4 GHz band. The IFB100 should be able to operate interference free while other devices share the band. It is suggested that when operating in a new location that a range test be conducted before the unit is used for a production.

IFB Input Mix page

IFB INPUT MIX:
LR MONO MIX

Page purpose: This page selects which audio is sent to the IFB transmitter.

Parameters:

- **RIGHT ONLY** – the IFB transmitter audio source is the right channel
- **LEFT ONLY** – the IFB transmitter audio source is the left channel
- **LR MONO MIX** – the IFB transmitter audio source is a 50/50 mix of both audio input channels

Lock page

LOCK 5
1

LOCKED 00:00:00:0
1

Page purpose: This page enables a lock function to prevent accidentally changing settings.

This page has a five-second countdown. After the timer expires, the display indicates **LOCKED**.

Locking the controls prevents accidentally changing settings. As a safety feature, while the unit is locked, only the unlock combination is available.

If you scan past the **LOCK** display to the next menu page, the **LOCK** will not engage.

Unlocking the transmitter

Simultaneously press the **MENU** and **INC** keys. Once it is unlocked, the screen will return to the [Pacifier page](#) {p.60}. Cycling the power will also clear the lock.

IFB100 Extended Menu

EXTENDED MENU
PRESS UP TO EXIT

The IFB100 contains several menu pages that normally do not have to be changed on a regular basis. These items are placed in the Extended Menu.

Entering the Extended Menu

1. Power down the IFB100.
2. Press and hold the **MENU** key while powering it up.

Exiting the Extended Menu

Cycle the power, or hold down the **MENU** key to get back to this page and press the **INC** key.

NOTE: All changes are saved to Flash ROM as soon as they are committed.

Highpass Filter page

HIGH PASS: OFF

Page purpose: This page maintains the cutoff frequency for the highpass filter.

Parameters:

- (Valid range: **30** to **220Hz**, Value step: **10**)
- **OFF**

Limiter page

LIMITER: OFF

Page purpose: This page enables/disables the limiter function.

Parameters: **[OFF]** / **[ON]**

Since it is implemented in the digital domain, the automatic limiter may engage even when you don't hear any substantial audio. The purpose of the limiter is to prevent the mic preamp (connected to the TA-5M) from over-driving the A/D converter, so the limiter operates on audio before it has been processed by the highpass filter. If there is a massive amount of low frequency audio content being filtered out, such as wind noise, you may hear the effects of the limiter without hearing the audio that caused the limiter to engage. If this occurs, the gain is set too high and you must reduce it to below the level that triggers the limiter.

IFB Format page

IFB FORMAT:
LOW Q

Page purpose: This page controls the quality of the transmitted IFB signal.

Parameters:

- **HIGH Q** – Selects the high quality codec.
- **LOW Q** – Selects the standard quality codec.

IMPORTANT: All units (TRX9xx/ZFR100) in the same group **MUST** use the same format to function correctly.

IMPORTANT: Any change made to this page requires a reboot before the new setting will take effect.

IFB Frequency page

IFB FREQ: 2.403

Page purpose: This page sets the band the IFB transmitter uses.

Parameters: (Valid range: **2.403** to **2.475** GHz, Value step: **0.001**)

Power-up Mode page

POWER UP MODE: UNLOCKED

Page purpose: This page determines whether the keys will be consistently locked after power-up.

Parameters:

- **LOCKED** – The keys are locked upon power-up.
- **UNLOCKED** – The keys are unlocked upon power-up.

This page works like the [Lock page](#) {p.62}. The only difference is that while the unit is locked using **Power-up Mode**, every time it is powered up, the keys will be locked and it will be necessary to unlock them before you can view/change anything.

Unlocking the IFB100

Simultaneously press the **MENU** and **INC** keys. Once it is unlocked, the screen will display the [Pacifier page](#) {p.60}.

Timecode Jam Mode page

TC JAM MODE: AUTO-LOAD

Page purpose: This page maintains how received timecode will be used.

Parameters:

- **AUTO-LOAD** – start and stop the transmitter's recorder when the input, based on the [Timecode Source page](#) {p.64} selection, starts and stops.
- **AUTO-JAM** – jams timecode continuously, based on the **Timecode Source page** selection.
- **MANUAL (OFF)** – jam timecode once, based on the **Timecode Source page** selection.

Timecode Source page

TC SOURCE: SIDE CONNECTOR

Page purpose: This page maintains which input to use as the timecode source.

Parameters:

- **SIDE CONNECTOR** – Accepts the timecode for syncing from the side connector.
- **IFB (RF)** – Does not apply to the IFB.
- **AUDIO INPUT** – Accepts the timecode for syncing from the Audio Input connector.

Timecode Output Enable page

TIMECODE OUTPUT: OFF

Page purpose: This page enables/disables timecode output and specifies the output connector.

Parameters:

- **ON: OUTRIGHT** – Sends timecode to the timecode output connection on the side.
- **ON: OUTLEFT** – Not currently used (for future expansion)
- **OFF** – Timecode is not output.

Remote Control Group ID page

```
REMOTE CONTROL  
GROUP ID=1
```

Page purpose: This page sets the Group ID # for this IFB100.

Parameters: (Valid range: 0 to 99, Value step: 1)

To use the remote control function, a group code must be selected. If it has not been selected, the IFB100 remote control is not enabled.

When setting the group code, be sure it is unique. This is very important when multiple wireless groups are in the same area, since any IFB100 on the same group code as yours can affect your TRX9xx/ZFR100 units. To avoid this, coordinate with others in the area and ensure everybody is on a separate group code.

Once the group code is set, multiple TRX9xx/ZFR100 units can be controlled remotely.

Remote Control Unit ID page

```
REMOTE CONTROL  
UNIT ID=001
```

Page purpose: This page maintains the number used to uniquely identify this transmitter.

Parameters:

- (Valid range: 1 to 200, Value step: 1)
- **ALL**

When using the IFB100, this identifier is used to remotely control one specific unit out of the entire group. This information is also useful in Post to identify the unit since it is recorded in the BWF metadata.

IFB Transmitter Power page

```
IFB TX POWER: 7
```

Page purpose: This page sets the IFB transmitter power output.

Parameters: (Valid range: 7 to 0, Value step: 1) {7 is full power.}

Use the lowest power setting for a given situation to conserve battery power.

TV Channel Minimum page

```
MIN FREQ: 560.0  
(TVCHAN MIN 29)
```

Page purpose: This page maintains the frequency scan's starting channel.

Parameters: (Valid range: 16 to 99, Value step: 1)

It should be the same as the start of the unit's block. The exception is when you know you will only be able to use the frequencies associated with only one or two channels. This will prevent you from assigning an out-of-bound frequency.

TV Channel Maximum page

```
MAX FREQ: 590.0  
(TVCHAN MAX 33)
```

Page purpose: This page maintains the frequency scan's ending channel.

Parameters: (Valid range: 16 to 99, Value step: 1)


It should be the same as the end of the unit's block. The exception is when you know you will only be able to use the frequencies associated with only one or two channels. This will prevent you from assigning an out-of-bound frequency.

IFB100 Independent Operations


Display a Detailed Startup Sequence

Press and hold the **DEC** key during power-up.

Detailed Startup Sequence (without any card inserted)

LCD SYNTH AB
PCB REVB BBBB VER A-AAA (CC)
NO CARD
NAME : DDDDDDDD
NAME : AUDIO
ZAXCOM VA-AAA IFB100 SN:ZZZZZ
2.403 - - - - 

Detailed Startup Sequence (with a formatted card inserted)

LCD SYNTH AB
PCB REVB BBBB VER A-AAA (CC)
FOUND SD CARD PCB REVB BBBB
NAME : DDDDDDDD
FOUND F SEGS MODE= (LLLLL)
FOUND F SEGS AUDIO LLLLL)
ZAXCOM VA-AAA IFB100 SN:ZZZZZ
2.403 - - - - 

(**LLLLL** – indicates which IFB Format is set in the Extended Menu.)

Chapter 7 – ZedAlpha Digital Wireless Monitoring Software

ZedAlpha was created by, and is maintained and sold through Orbital Sound – <http://www.orbitalsound.co.uk/>.

It is a very powerful software tool, able to simultaneously monitor and control up to 128 Zaxcom Digital Receivers. It can resize its graphics to make the best use of the available screen space, whether you're using 8 or 128 audio channels.

It allows the remote monitoring of all of the principle parameters of each TRXxxx transmitter, including: remaining battery life, RF level and audio level. Plus an expanded view of each channel, streams the last minute of data for analysis and faultfinding. In addition, it can be used to program the receiver functions including setting the encryption codes, enabling secure and confidential transmission.

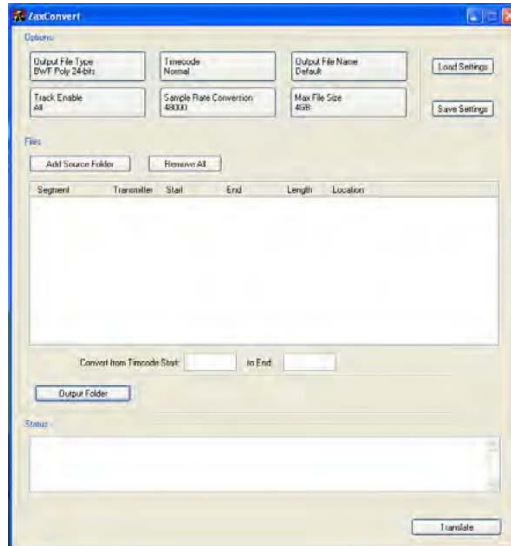


Figure 7-1 ZedAlpha screen

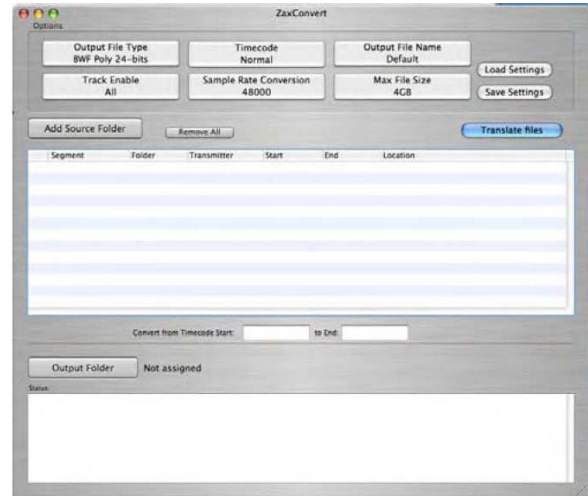
Chapter 8 – ZaxConvert Utility

About ZaxConvert

The ZaxConvert software is available for both MS Windows and Mac OS X. The software is functionally identical on both operating systems. You must use the ZaxConvert software to convert the audio from .ZAX files to .WAV files.



Windows XP



Mac OS X

Figure 8-1 ZaxConvert Windows & Mac Main screens

Using ZaxConvert

When you use ZaxConvert, you must first assign an output folder. Next, add your source folder. The following buttons contain additional options that are available when translating ZAX files to broadcast WAV files:

- Output File Type
- Timecode
- Sample-Rate Conversation
- Maximum File Size
- Output File Name
- Track Enable

When displayed on the main screen, the button shows the current setting.

Output File Type

This menu allows you to select the number of channels; bit-depth and output file type. In addition, if the Post facility is using a DV40, you can force a 48 kHz stamp to be used on the output files.

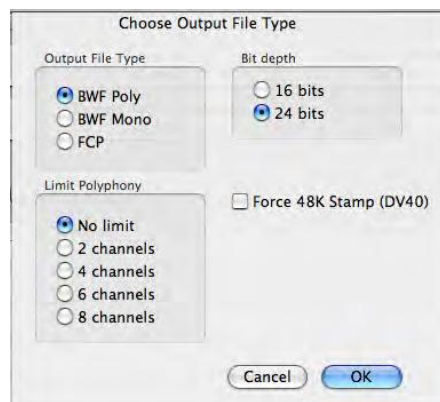


Figure 8-2 Choose Output File Type screen

Timecode

This menu allows you to pull-up or pull-down timecode or leave the timecode as it was set during audio recording.

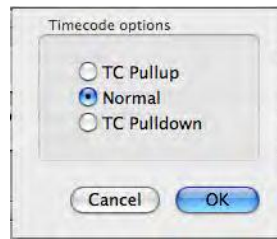


Figure 8-3 Timecode Options screen

Sample-Rate Conversion

This menu allows you to convert the sample-rate from the 48 kHz sample-rate used while recording.

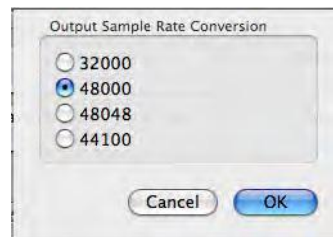


Figure 8-4 Output Sample Rate Conversion screen

Maximum File Size

This menu allows you to set the maximum file size of the audio tracks. This is useful when trying to place audio on media or when trying to limit the file size. Many audio applications can only handle files that are 2 GB or smaller due to limitations in the .WAV file format.

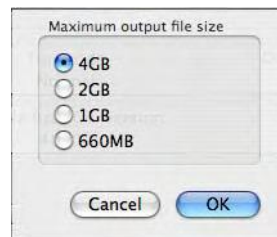


Figure 8-5 Maximum Output File Size screen

Output File Name

Reserved for future use.

Track Enable

Reserved for future use.

Chapter 9 – Equipment Specifications

NOTE: All specifications in this chapter are subject to change without notice.

TRX900 (/AA) Specifications

Transmitter

RF Power Output	10 / 25 / 50 mW – Software selectable
RF Modulation	Proprietary digital method
RF Frequency Range	518.0 to 872.0 MHz (blocks are 20 to 36 MHz)
RF Frequency Step	100 KHz
RF Bandwidth	US Setting: 200 KHz Euro Setting: 125 KHz
Channel Separation	500 KHz (700 KHz recommended)
Antenna Connector	50-ohm SSMA female
Emission Designator	180 KV2E
FCC Part	74.861

Transmitter Audio

Dynamic Range	106 dB
Distortion	0.001%
Frequency Response	Mode 0: 20 Hz to 16 kHz T&M Model: 0.2 Hz to 16 kHz
Highpass Filter	'OFF' or 30 to 220 Hz, step: 10 (6 dB per octave)
System Group Delay	US Mono mode: 3.6 ms Euro mode: 6 ms Stereo mode: 6 ms
Mic Power	3.3 VDC
Mic Connector	3-pin micro-LEMO
Input Range	–60 to –30 dBu
Impedance	4.7 k ohms
ADC Bit-depth	24 bits
ADC Sampling-rate	48 kHz

Timecode Reader/Generator

Clock Accuracy	1.54 PPM (1 frame out in 6 hours)
Timecode Type	SMPTE
Timecode Frame-rates	23.98, 24, 25, 29.97NDF, 29.97DF, 30NDF, 30DF

Recording (optional)

Media	MiniSD card (Flash memory)
File Format	.ZAX
Recording Time	96 hours (with a 16 GB card)

IFB Receiver (optional)

RF Frequency Range	2.403 to 2.475 GHz
RF Modulation	Digital Spread Spectrum
RF Frequency Step	0.001 GHz (1 MHz)
RF Bandwidth	1 MHz
Channel Separation	2 MHz (8 MHz recommended)
Sensitivity	–96 dBm
DAC Bit-depth	24 bit
DAC Rate	48 kHz
Frequency Response	20 Hz to 12 kHz
Output Impedance	8-ohm minimum

Physical

Weight	TRX900: 4.0 oz (113 grams) with battery TRX900AA: 4.0 oz (113 grams) with battery
Dimensions (H x W x D)	TRX900: 2.3" x 2.3" x .65" (58 mm x 58 mm x 17 mm) TRX900AA: 3.38" x 2.3" x .65" (85 mm x 58 mm x 17 mm)
External Power (STAxXX)	9 to 18 VDC @ 125 mA
Internal Power (Battery)	TRX900: up to 5 hours @ 50 mW (one CR123) TRX900AA: up to 10 hours @ 50 mW (two AA)
Display	Graphic LCD panel

TRX992 Specifications

Transmitter

RF Power Output	10 / 25 / 50 / 100 mW – Software selectable
RF Modulation	Proprietary digital method
RF Frequency Range	518.0 to 872.0 MHz (blocks are 20 to 36 MHz)
RF Frequency Step	100 KHz
RF Bandwidth	US Setting: 200 KHz Euro Setting: 125 KHz
Channel Separation	500 KHz (700 KHz recommended)
Antenna Connector	50-ohm SMA female
Emission Designator	180 KV2E
FCC Part	74.861

Transmitter Audio

Dynamic Range	106 dB
Distortion	0.001%
Frequency Response	Mode 0: 20 Hz to 16 kHz T&M Model: 0.2 Hz to 16 kHz
Highpass Filter	'OFF' or 30 to 220 Hz, step: 10 (6 dB per octave)
System Group Delay	US Mono mode: 3.6 ms Euro mode: 6 ms Stereo mode: 6 ms
Mic Power	48 VDC Phantom, balanced, 10 mA max
Mic Connector	XLR-3F
Input Range	Line-level: -10 to +4 dBu Mic-level: -60 to -30 dBu
Impedance	Line-level: 6.2 k ohms Mic-level: 4.6 k ohms
ADC Bit-depth	24 bits
ADC Sampling-Rate	48 kHz

Timecode Reader/Generator

Clock Accuracy	1.54 PPM (1 frame out in 6 hours)
Timecode Type	SMPTE
Timecode Frame-rates	23.98, 24, 25, 29.97NDF, 29.97DF, 30NDF, 30DF

Recording

Media	MiniSD card (Flash memory)
File Format	.ZAX
Recording Time	96 hours (with a 16 GB card)

IFB Receiver

RF Frequency Range	2.403 to 2.475 GHz
RF Modulation	Digital Spread Spectrum
RF Frequency Step	0.001 GHz (1 MHz)
RF Bandwidth	1 MHz
Channel Separation	2 MHz
Sensitivity	-96 dBm
DAC Bit-depth	24 bit
DAC Rate	48 kHz
Frequency Response	20 Hz to 12 kHz
Output Connector	1/8" Stereo (3.5 mm)
Output Impedance	8-ohm minimum

Physical

Weight	13.2 oz (374 grams) with battery
Dimensions (H x W x D)	5.5" x 2.9" x 1.1" (140 mm x 74 mm x 28 mm)
External Power	N/A
Internal Power	up to 4 hours @ 50 mW (one VPX)
Display	Graphic LCD panel

TRX700 Specifications

Transmitter

RF Power Output	10 / 25 / 50 mW – Software selectable
RF Modulation	Proprietary digital method
RF Frequency Range	518.0 to 872.0 MHz (blocks are 20 to 36 MHz)
RF Frequency Step	100 KHz
RF Bandwidth	US Setting: 200 KHz Euro Setting: 125 KHz
Channel Separation	500 KHz (700 KHz recommended)
Antenna Connector	50-ohm SSMA female
Emission Designator	180 KV2E
FCC Part	74.861

Transmitter Audio

Dynamic Range	106 dB
Distortion	0.001%
Frequency Response	Mode 0: 20 Hz to 16 kHz T&M Model: 0.2 Hz to 16 kHz
Highpass Filter	'OFF' or 30 to 220 Hz, step: 10 (6 dB per octave)
System Group Delay	US Mono mode: 3.6 ms Euro mode: 6 ms Stereo mode: 6 ms
Mic Power	48 VDC Phantom, balanced, 10mA max
Mic Connector	XLR-3F
Input Range	-60 to -30 dBu (Mic-level)
Impedance	5 k ohms
ADC Bit-depth	24 bits
ADC Sampling-Rate	48 kHz

Timecode Reader/Generator

Clock Accuracy	1.54 PPM (1 frame out in 6 hours)
Timecode Type	SMPTE
Timecode Frame-rates	23.98, 24, 25, 29.97NDF, 29.97DF, 30NDF, 30DF

Recording (optional)

Media	MiniSD card (Flash memory)
File Format	.ZAX
Recording Time	96 hours (with a 16 GB card)

Physical

Weight	6.6 oz (187 grams) without battery
Dimensions (H x W x D)	1.75" x 3.75" x 1.75" (44mm x 95mm x 44mm)
External Power	N/A
Internal Power	up to 4 hours @ 50 mW (two AA)
Display	Graphic LCD panel

TRX800 Specifications

Transmitter

RF Power Output	10 / 25 / 50 mW – Software selectable
RF Modulation	Proprietary digital method
RF Frequency Range	518.0 to 872.0 MHz (blocks are 20 to 36 MHz)
RF Frequency Step	100 KHz
RF Bandwidth	US Setting: 200 KHz Euro Setting: 125 KHz
Channel Separation	500 KHz (700 KHz recommended)
Antenna Connector	50-ohm SMA female
Emission Designator	180 KV2E
FCC Part	74.861

Transmitter Audio

Dynamic Range	106 dB
Distortion	0.001%
Frequency Response	Mode 0: 20 Hz to 16 kHz T&M Model: 0.2 Hz to 16 kHz
Highpass Filter	'OFF' or 30 to 220 Hz, step: 10 (6 dB per octave)
System Group Delay	US Mono mode: 3.6 ms Euro mode: 6 ms Stereo mode: 6 ms
Mic Power	9 VDC
Mic Connector	Compatible with Shure™ screw-on microphone capsules
Input Range	-60 to -30 dBu
Impedance	10 k ohms
ADC Bit-depth	24 bits
ADC Sampling-Rate	48 kHz

Timecode Reader/Generator

Clock Accuracy	1.54 PPM (1 frame out in 6 hours)
Timecode Type	SMPTE
Timecode Frame-rates	23.98, 24, 25, 29.97NDF, 29.97DF, 30NDF, 30DF

Recording (optional)

Media	MiniSD card (Flash memory)
File Format	.ZAX
Recording Time	96 hours (with a 16 GB card)
Audio Output Connector	1/8" Stereo (3.5 mm)

Physical

Weight	8.2 oz (232 grams) without a battery
Dimensions (L x Dia)	6.12" x 1.5" (155mm x 38mm) without a windscreen and mic capsule
External Power	N/A
Internal Power (Battery)	up to 5 hours @ 50 mW (one CR123)
Display	Graphic LCD panel

RX900 (M/S) Specifications

Receiver

Receiver Type	True diversity single conversion digital demodulator
RF Modulation	Proprietary digital method
RF Frequency Range	518.0 to 872.0 MHz (blocks are 20 to 36 MHz)
RF Frequency Step	100 KHz
RF Bandwidth	US Mode: 200 KHz Euro Mode: 125 KHz
Channel Separation	500 KHz (700 KHz recommended)
Sensitivity	-110 dBm
Antenna Connector	50-ohm SMA female

Receiver Audio

Dynamic Range	114 dB
Distortion	0.001%
DAC Bit-depth	24 bit
DAC Rate	48 kHz
Audio Output Connector	Stereo: XLR-5M Mono: XLR-3M
Audio Output Level	Mic: -40 dBm Line: -6 dBm

Physical

Weight	4.0 oz (113 grams) with battery
Dimensions (H x W x D)	1.25" x 3.25" x 5.25" (32mm x 83mm x 133mm)
External Power	9 to 18 VDC @ 200 mA (150 mA in Power Saver mode)
Internal Power	up to 4 hours (four AA) @ 470 mA (350 mA in Power Saver mode)
Display	Graphic LCD panel

RX4900 Specifications

Receiver (x 4)

Receiver Type	True diversity single conversion digital demodulator
RF Modulation	Proprietary digital method
RF Frequency Range	518.0 to 872.0 MHz (blocks are 20 to 36 MHz)
RF Frequency Step	100 KHz
RF Bandwidth	US Setting: 200 KHz Euro Setting: 125 KHz
Channel Separation	500 KHz (700 KHz recommended)
Sensitivity	-110 dBm
Antenna Connector	50-ohm BNC female

Receiver Audio

Dynamic Range	114 dB
Distortion	0.001%
DAC Bit-depth	24 bit
DAC Rate	48 kHz
Audio Output Connector	8 – XLR-3M (mono)
Audio Output Level	Mic: -40 dBm Line: -6 dBm

Physical

Weight	4.2 lbs (1.9 kg)
Dimensions (H x W x D)	1.75" x 19" x 7.94" (44 mm x 483 mm x 202 mm)
External Power	9 to 18 VDC @ 800 mA
Internal Power	N/A
Display	Graphic LCD panel

IFB100 Specifications**Transmitter**

RF Power Output	100 mW
RF Modulation	Digital Spread Spectrum
RF Frequency Range	2.403 to 2.475 GHz
RF Frequency Step	0.001 GHz (1 MHz)
RF Bandwidth	1 MHz
Channel Separation	2 MHz
Antenna Connector	50-ohm SMA female
Emission Designator	180 KV2E
FCC Part	CFR Title 47, Part 18

Transmitter Audio

Dynamic range	103 dB
Distortion	0.01%
Frequency Response	20 Hz to 12 kHz
Highpass Filter	'OFF' or 30 to 220 Hz, step: 10 (6 dB per octave)
System Group Delay	10 ms

Audio Input

Connector	TA-5M
Type	Balanced
Level	-10 to +8 dBu
Impedance	10 k ohms
ADC Bit-depth	24 bits
ADC Sampling-rate	48 kHz

Timecode Input

Connector	1/8" Stereo (3.5 mm)
Level Range	1 to 5V, P-P
Impedance	10 k ohms

Timecode Reader/Generator

Clock Accuracy	1.54 PPM (1 frame out in 6 hours)
Timecode Type	SMPTE
Timecode Frame-rates	23.98, 24, 25, 29.97NDF, 29.97DF, 30NDF, 30DF

Physical

Weight	6 oz. (170 grams)
Dimensions (H x W x D)	3.44" x 3.88" x .9" (87 mm x 98 mm x 23 mm)
External Power	8 to 18 VDC @ 125 mA
Internal Power	N/A
Display	Graphic LCD panel

Chapter 10 – Wiring Diagrams

NOTE: All of the diagrams in this chapter show the solder side of each connector.

NOTE: The following 3-pin micro-LEMO connectors mate with the microphone connector:

- FGB.00.303.CLAD.22 – has a latch with a pull release. (HIGHLY recommended for RFI prevention)
- FVB.00.303.NLA – has a latch with a twist release.

IMPORTANT: The reason for the break on serial #, transmitters before #1315 do not have a bias resister installed. To have a mic work with them it is necessary to include it.

CAUTION: When wiring a microphone for the TRX900 (/AA), the microphone shield/ground must be connected to the LEMO shell as well as the correct pin on the microphone connector itself. This connection stops RF energy from entering the body pack through the shield of the microphone cable. If this happens, the user can experience RF dropouts at any distance from the receiver. Routing the microphone cable away from the TRX900 antenna is a temporary fix if this effect is noticed. Use of the push-in type LEMO connector, rather than the screw in type, is advised as it is easier to make the ground connection to the connector shell.

TRX900 (/AA) Microphone Cables (after serial # 1314)

NOTE: Before building cable(s) using these diagrams, **PLEASE REVIEW** the information at the top of this chapter.

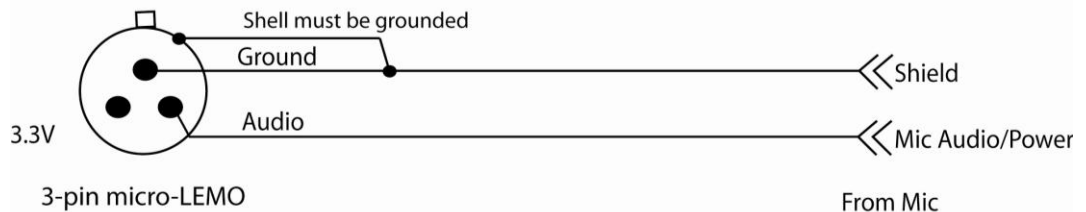


Figure 10-1 Two-wire microphone configuration (current transmitters)

Contact your Mic's
Manufacturer.

Figure 10-2 Three-wire microphone configuration (current transmitters)

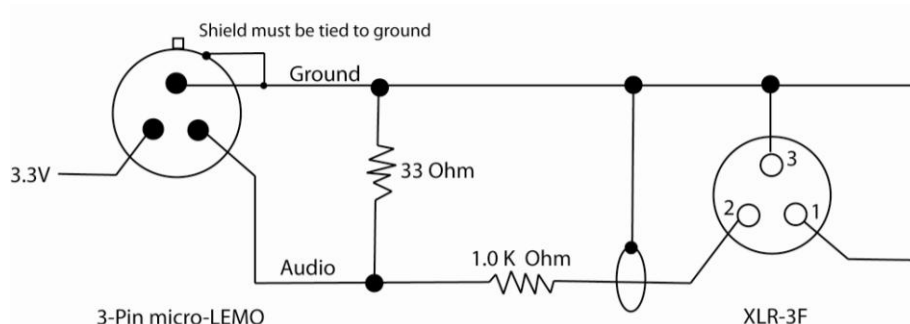


Figure 10-3 Balanced Line to TRX900 (/AA)

TRX900 (IAA) Microphone Cables (before serial # 1315)

NOTE: Before building cable(s) using these diagrams, **PLEASE REVIEW** the information at the top of this chapter.

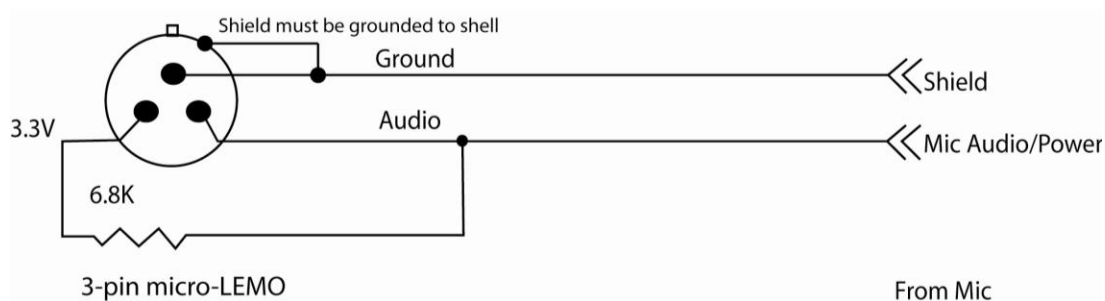


Figure 10-4 Two-wire microphone configuration (previous transmitters)

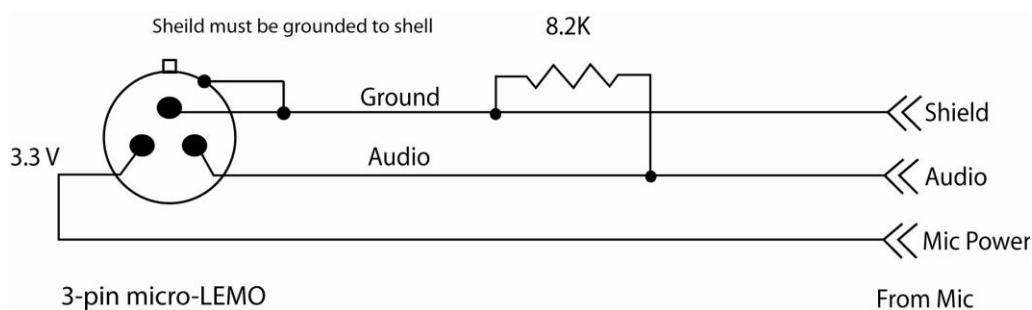


Figure 10-5 Three-wire microphone configuration (previous transmitters)

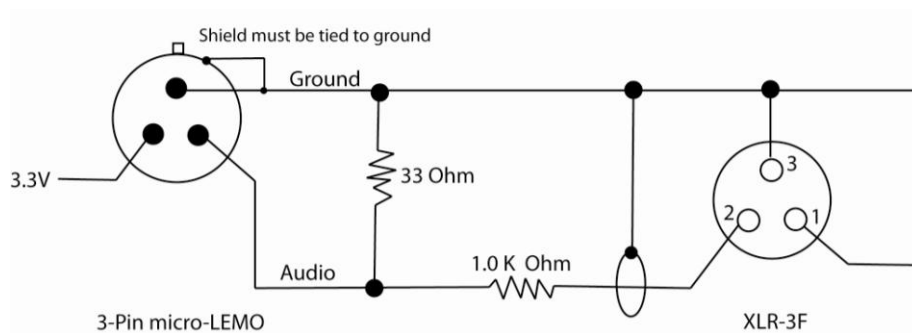


Figure 10-6 Balanced Line to TRX900 (IAA)

STAxxx and IFB100 Cables

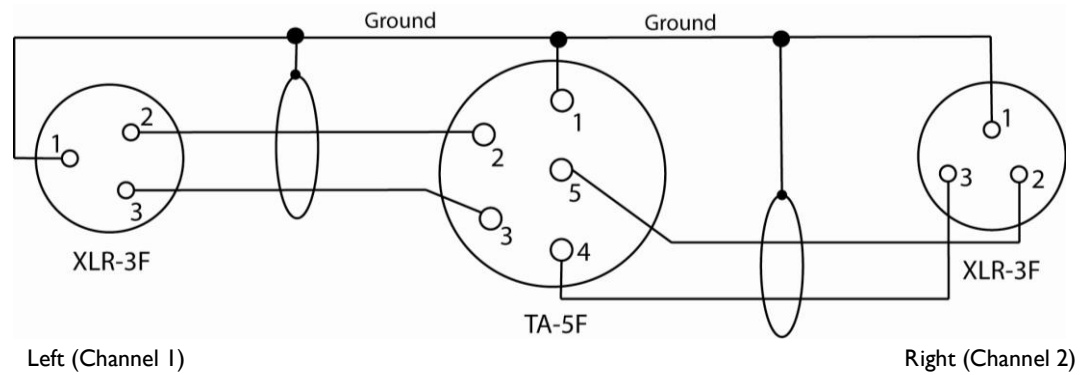


Figure 10-7 Standard XLR-3F to TA-5F Line-level input cable

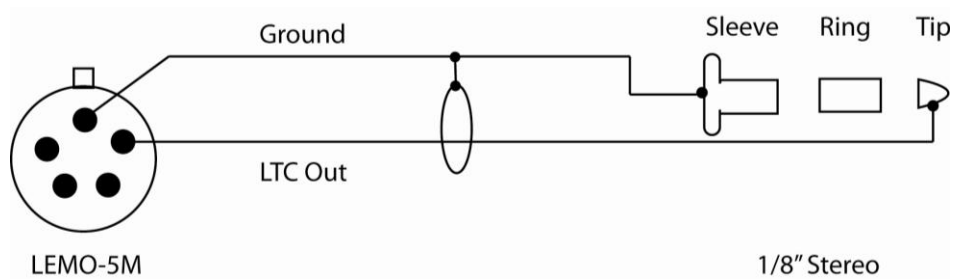


Figure 10-8 LEMO-5M to 1/8" male timecode input cable

IMPORTANT: A stereo plug is required for external timecode sync. Do **NOT** connect to the ring on the plug. You cannot use a mono plug. A mono plug will not destroy any components but it will short out the signal.

TRX700 Jam Sync Cable

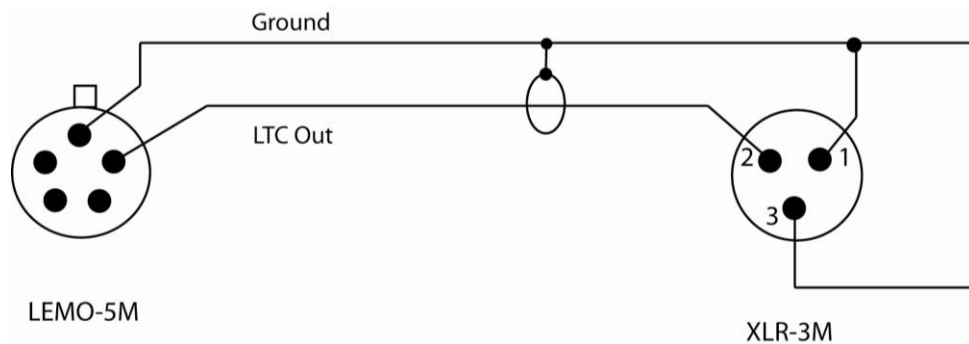


Figure 10-9 LEMO-5M to XLR-3M timecode input cable

Chapter 11 – Firmware Information

Firmware

Each unit is shipped with the latest firmware version installed. For the TRX900, TRX900AA, TRX992, TRX700, TRX800 and IFB100, as newer firmware becomes available, it can be downloaded from the Zaxcom website (http://zaxcom.com/software_up_dates.htm). For the RX900 (M/S) and RX4900, the unit must be returned to Zaxcom, Inc to upgrade its firmware.

Each time a unit is powered up, the firmware version number is displayed briefly on the LCD screen.

Advantages to Upgrading the Firmware

By upgrading the software, the range and feature set have and will continue to dramatically increase over time. Zaxcom has a reputation for constantly adding additional features and user suggestions during the product's lifetime. This ensures that your wireless system will perform better and better, the longer you own it.

Upgrading the firmware in each unit

Perform the following:

- 1) Download the firmware from the Zaxcom website and load it onto a MiniSD memory card.
- 2) Insert the card (with the downloaded firmware) into the unit.
- 3) Simultaneously hold down the **INC** and **DEC** keys while powering up the unit.
- 4) The screen will display the sequence below. From power up to “**DONE**” takes about 30 seconds.
- 5) Upon completion, cycle the power to run on the new version.

```
LCD
SYNTH AB
```

```
PCB REV B      0150
VER #-###      {03}
```

(#-### – indicates the currently installed version.)

```
FOUND SD CARD
PCB REV B      0150
```

```
BURN ROM
TRX-####.bin
```

(TRX-####.BIN – indicates the firmware package being loaded.)

```
ERASE0...
TRX-####.bin
```

```
ERASE1 . . .
TRX-####.bin
```

```
BURNING ROM . . .
TRX-####.bin
```

```
READ BACK TEST
```

(At this point, the firmware has been installed and the system is verifying the install.)

```
DONE
```

(The install process has completed successfully.)

CAUTION: Do not power down the unit during the upgrade process.

Before installing the upgrade, be sure to insert a fresh set of batteries. If the unit should lose power during the upgrade, it will need to be sent back to Zaxcom for repair.

Significant Change Reminders

Using Remote Control and Timecode while in HQ Mode (2009-06-03) TX Version 6.08+

This version now allows receiving Timecode and the using Remote Control while High Quality Audio mode is selected.

Using High Capacity SD Cards (2009-03-03) TX Version 5.98+

A problem with using 4GB, 8GB and 16GB cards has been fixed. This change could possibly cause some older cards to stop working. If you upgrade to this version and find that your brand of SD card no longer works, you may need to use another brand of SD card to downgrade to an older version.

Note: large cards take longer to start up.

New IFB High Quality Mode in TRX992 (2009-01-29) TX Version 5.92T+ IFB Version 5.92+

The user may select between high quality audio mode and normal mode.

Note: while in high quality mode, the wireless timecode and remote control features are not available.

New Receiver LCD module (2008-12-04) RX x80+

A new LCD module has been incorporated into all of the receiver configurations.

NOTE: effective with serial # 1517.

Independent TRX992 Firmware version (2008-11-29) TX Version 5.70T+

The TRX992 requires special software to make its enhanced IFB circuitry work properly. Make sure the firmware program you load into the TRX992 always has a "T" suffix.

Left/Right Switch Mode (2008-11-24) TX Version 5.68+ RX Version x83 or x78+

This new functionality allows the user to cause the audio to switch from the left to the right output channel on a stereo receiver when a button is pressed on the transmitter. This allows the talent to talk to the sound mixer without it being heard on air.

New IFB Audio Codec (2008-05-21) TX & IFB Version 5.50a+

The IFB audio transmission format has changed. To maintain IFB audio compatibility, both the IFB transmitter(s) and the audio transmitter(s) must be loaded with this version or higher.

Know Firmware Problems

Transmitters

- **PROBLEM:** Naming your transmitter "ZAXCOMSD" in the [Track Name page](#) {p.37}, will cause the Format function in the [Media Erase & Format page](#) {p.32} to fail.
WORKAROUND: Don't do that.
- **PROBLEM:** The first audio segment is always timecode stamped with 00:00:00.
WORKAROUND: Go into record mode for a few seconds, after the card has been initialized. Any recording after this point will have the correct timecode recorded in the file.

Receivers

NONE

IFB

NONE

TRX / ZFR / IFB Firmware History

=====

Version 6.08: 2009-05-28

Changed Almost the same as 6.07 but in Release configuration

=====

Version 6.07: 2009-05-28

Changed recompiled with build options from 5.99 to fix strange intermittent TX modulation problems (mostly stereo)

=====

Version 6.06: 2009-05-18

Added remote control and timecode to high quality IFB codec

=====

Version 6.03: 2009-04-08

Added Prevented large SD cards from slowing down boot process
 Added SD card speed screen in Factory menu, which changes the SD cards clock speed in MHz and displays latency in milliseconds
 Deleted Double occurrence of Gain change on Revc boards, which may have corrupted recordings when Gain is changed (manually or via the limiter)

=====

Version 6.01: 2009-04-28

Added IFB Earpiece screen to ZFR

=====

Version 6.00: 2009-04-08

Added STA-150 setting to ADC external mode page
 Changed Forced ADCExternal==1 when product is IFB

=====

Version 5.99: 2009-03-13

Changed rounding of MBytes and GBytes display (round up using 999.9)

=====

Version 5.98: 2009-03-03

Fixed formatting cards larger than 4GB

=====

Version 5.97: 2009-02-19

Changed Transmitter stops transmitting for 1 second while changing frequency to prevent stomping on intermediate frequencies
 Changed PACIFIER Page – display of remaining recording time

=====

Version 5.96: 2009-02-12

Added "FORMAT CANCELED" text when just writing wrapper files to card using 9 DEC key presses

=====

Version 5.95: 2009-02-12

Fixed Remaining Recording Time display area in the PACIFIER screen

=====

Version 5.94: 2009-02-11

Removed GROUP ID and UNIT ID screens if IFBMODE = not installed
 Removed TRX800 – MUTE SWITCH ENABLE screen
 Removed All four of the AUDIO TRANSMITTER POWER CALIBRATION screens
 Added Tx power display value to Tx Power Calibration screens
 Changed Display of Remaining Recording time while IFBMODE = not installed
 Fixed Card Size Display during bootup
 Removed IFB100 & ZFRxxx – LR SWITCH MODE screen
 Removed IFB100 – NAME display during bootup

=====

Version 5.93T: 2009-02-05

Fixed loud clicking sound when IFB signal started to get weak

=====

Version 5.93: 2009-02-04

Added CRC error check in IFB RX interrupt
 Changed IFBmode_screen to include the new CRC error counters

=====

Version 5.92: 2009-01-29

Added Card reformat to the MEDIA ERASE & FORMAT screen (9 DEC key presses)
 Changed SD card's volume label from ZAXCOM to ZAXCOMSD

=====

Version 5.90: 2009-01-27

Added re-start if recording was forced into STOP mode due to an SD card problem

Version 5.89: 2009-01-27

- Changed IFB100 – hardcoded the previously updatable record status, preventing the display of "LREC", to prevent confusion.
- Changed Disallow record-mode screen if the record option is not installed.
- Added IFB100 - TVCH MAX & TVCH MIN screens to Extended menu to support the REMOTE FREQUENCY CHANGE screen
- Changed IFB100 –TVCH MAX & TVCH MIN screens display the frequency as well as the existing TV channel
- Changed Increased size of RECFIFO buffer
- Removed TRX700 – IFB EAPIECE SOURCE screen
- Removed IFB100 – IFB INPUT MIX screen

Version 5.88: 2009-01-26

- Added TRX992 – VPX battery formula
- Changed TRX992 – swapped IFB mixer knob rotation to match the silk screen

Version 5.87: 2009-01-25

- Deleted remnants of BlownPA detector
- Deleted ICAL, QCAL and DIAMOND screens from factory menu

Version 5.86T: UNKNOWN

- Changed HeadPhone Beep tones are now SUMMED into HP
- Changed location of channel changer in RX-INT handler (glFBSlotTimer==1)

Version 5.85T: 2009-01-22

- Added 500Hz headphone beep to LRSWitch mode
- Added tone64[]

Version 5.84T: 2009-01-22

- Changed TRX900 text to TRX992

Version 5.83: 2009-01-21

- Added TRX900 & TRX800 – LRSWitch option

Version 5.82: UNKNOWN

- Changed problem with IFB format and TXformat overlap

Version 5.81: UNKNOWN

- Changed IFB channel changing scheme

Version 5.80T: UNKNOWN

- Added new format scheme that separates TX and RX formats for IFB and Txer
- Added IFB_RX_FORMAT_screen
- Added high quality IFB format mode (no timecode or remote control in this mode)
- Deleted QCAL screen from IFB

Version 5.75T: UNKNOWN

- Changed PROBLEM WITH STUFFED DECODE CONDITION

Version 5.74T: 2009-01-12

- Disabled IFB MIX screen if IFBoptioncode == 0
- Changed LCD opts back 'ON'

Version 5.73: 2009-01-11

- Added TRX800 - MENU key to enter Extended Menus (REC key already does this)
- Changed "UNIT CODE" to "UNIT ID"
- Changed "GROUP CODE" to "GROUP ID"
- Removed IFB100 - ADC SELECT screen, BATTERY TYPE screen, ICAL screens, QCAL screens
- Removed IFB100 – battery graphic from the PACIFIER screen
- Deleted IFB FREQUENCY BAND screen since it's always set to the 2GHz band
- Changed sub channel keys to use Pre-Lock key status (added gXkeyStatesPreLOCK)
- Added sub channel support for bXKEYS_8PUNCH key press (and RECORD key)

Version 5.72: 2008-12-11

- Added Support for wireless remote channel changing via IFB100
- Fixed OLD LCD lines were swapped due to wrong page numbers

Version 5.71: 2008-12-03

Added Support for new LCD module (serial 1988 & above)

Version 5.7LL: 2008-12-03

Changed ** SPECIAL VERSION ** hold UP key to force a LCD mode change

Version 5.70T: 2008-11-29

Added TRX992 – mute chunk in IFB audio codec when no packets are arriving

Version 5.70R: 2009-01-29

Changed parm==0 problem and some more tweaks to terminal and Trx900.c

Version 5.69R: 2008-11-28

Added special IQ cal mode in Terminal.c

Version 5.68R: 2008-11-24

Changed working on RXpacket / power up / down feature for RCR

Version 5.67R: 2008-11-22

Changed command line seems to work

Version 5.66R: 2008-11-21

Changed RAW RS232 in and out work at 300 baud

Version 5.65R: 2008-11-17

Changed forced unit = 1 in RCR software

Version 5.64R: 2008-11-15

Changed turn 'ON' PTT pin for RCR (remove this for normal units!)

Changed forced settings for RCR unit (IFB = 'ON') Group=42 etc

Version 5.62g: 2008-10-23

Added MUTE switch option

Changed a RED LED also means MUTE

Changed lock screen now locks out the transport buttons as well as the INC, DEC, MENU buttons

Added DYNAMICS screen

Added theatrical mod support

Fixed FORMAT_CARD to fix last wrapper file size corruption

Fixed removed several useless menus from IFB products

Changed renamed menu item LED Reverse to Hardware Options

Changed extended GAIN range from 0 – 38 dB to 0 – 52 dB

Changed allow US_MONO_R format with a hand held mic (for new audio board mod)

Version 5.53: 2008-07-15

Added support for high capacity SD cards (4GB and higher) and more support for other smaller cards.

Version 5.51: 2008-05-21

Fixed recent IFB jam bug (could cause timecode to stop)

Version 5.50a: UNKNOWN

Changed re-wrote IFB audio codec (sounds less crunchy)

Version 5.36a: 2008-05-13

Changed Reversed cursor direction in the OPT and IDCODES screens

Fixed bug in OPT screen

Version 5.34a: 2008-04-23

Added IFB100 - always allow IFB POWER SELECTION screen in the Extended Menu

Disabled IFB100 – EXPANDER and IDCODES screens

Version 5.33c: 2008-04-21

- Added TIMECODE OUTPUT ENABLE screen
- Added New user power level settings for high power RF boards
- Moved EXPANDER screen to bottom of extended menu
- Added TRX990 - separate Left and Right gain setting
- Fixed TRX990 - a new gain problem in Mono mode
- Changed TRX990 - GAIN-L to GAIN-1
- Changed TRX990 - GAIN-R to GAIN-2
- Fixed IFB100 - IFB power setting to work above power level 3

Version 5.33b: UNKNOWN

- Fixed TC Reader no longer jams on seconds boundary

Version 5.33a: UNKNOWN

- Changed Loosened jam requirements

Version 5.20: 2008-03-07

- Added Higher resolution transmit waveform to increase TX range

Version 5.19: 2008-02-29

- Added Timecode display in LOCK screen
- Added Timecode debug codes to DBG screen
- Fixed 23/24/25 fps TC reader problems
- Fixed Transmitter's name initialization (was always NLD by default now it's SN#####)

Version 5.17: 2008-02-18

- Fixed Timecode problem with 23.98, 24 and 25fps timecode. This was causing autoloop to trigger several times in a take. This version should be used in an IFB transmitter if using the wireless autoloop feature

Version 5.13: 2007-12-18

- Added Low battery warning text on PACIFIER screen
- Added EXPANDER screen (experimental version)
- Added BATTERY TYPE screen (LITHIUM, ALKALINE and NIMH) NIMH needs some tweaking
- Added Voltage display in PACIFIER screen (press **INC** key)
- Added 500ms delay in AUDIO GAIN screen to prevent accidental gain change when leaving the LOCK screen
- Added Support for Non-Loop Record mode
- Added "FULL" message to PACIFIER screen for Non-Loop Record mode
- Changed LOCK screen to prevent unintended GAIN changes
- Fixed Left/right audio channel swap problem (effected only some units)
- Modified IFB100 - TXPWR screen to Extended Menu to adjust transmitter output power

Version 5.04: 2007-11-12

- Fixed Stereo TONE transmit problem (*since 5.02)

Version 5.03: 2007-11-09

- Added Accurate voltage display on the PACIFIER screen and AUDIO GAIN screen (press DOWN or UP key)
 - Modified Low Power mode triggers a new experimental Low Power mode.
- This mode is triggered if:
- LED mode = "LOW POWER MODE"
 - TX Format = US (MONO)
 - IFBMODE = "OFF"
- Timecode, IFB and Recording features are turned 'OFF' in this mode
- To change to Low Power mode:
1. Go to Extended Menu (hold **MENU** while powering up the unit)
 2. Change IFBMODE to 'OFF' (if you have that option)
 3. Go to the LEDREVERSE screen (one of the last menu pages). The LEDREVERSE setting allows you to change the default color of the LED. The LED should usually be green.
 4. Change the setting to LED LOW PWR MODE while keeping the LEDREVERSE setting the same digit as it was previously.
 5. If the conditions have been met, the unit will display LOW POWER MODE, IFB IS OFF when the unit boots up again and the LED turns 'OFF' when not in use. This setting should increase the battery life by over 15% depending on the chemistry of the batteries you are using.
- Added IFB100 - TXPWR SCREEN (range = 0 to 7)

Version 5.00d: UNKNOWN

Added Timecode wrap at 24 hours for non-jammed timecode setting using last recorded segment as TCjam

Fixed a serious record bug that prevented the unit from going into record if the timecode had wrapped around the 24-hour mark.

Version 5.00b: UNKNOWN

Added Special super Low Power operating mode: It is triggered if:
LED mode = LOW POWER MODE
TX Format = US (MONO)
(NOTE: no timecode, IFB or recording is available in this mode)

Changed battery meter table

Version 5.00a: 2007-11-03

Added LED OFF mode in the LEDREVERSE screen

Version 5.00: 2007-10-29

Fixed TRX900 - swapped LOW1 / LOW2 display in the PACIFIER screen's remote power display

Version 4.99a: UNKNOWN

Fixed IFB side autoload (would not go into STOP because it never really went into RECORD)

Version 4.99: 2007-10-04

Added support for RCR dual mic side adapter
Changed stereo to always be ISO
Changed FORMAT_EUNB to FORMAT_MONO_R

Version 4.98: 2007-09-25

Fixed IFB Autoload function (remote transport commands TXifb.NS_RemoteTPmode not being set)

Version 4.97a: 2007-09-25

Changed sector size from 32k to 16k (or less) for Digital Foci PhotoSafe (FAT16 vs. FAT32 problem)

Version 4.97: 2007-08-31

Fixed a serious bug regarding the RecoverOpenSegment feature. If the unit is powered down while in record, the next recorded segment could begin at the start of the card, which would overwrite previous audio and make only that last recorded segment available.

The new ZaxConvert software (v5-97) fixes a minor problem with the RecoverOpenSegment feature and now appends the segment number (in decimal) to the end of each generated WAV or MP3 file.

Version 4.95: 2007-08-10

Added IFB VOTING screen. Turn 'ON' voting only if you have two IFB transmitters transmitting 2MHz apart from each other. If a receiver has voting turned 'ON' and it loses its IFB signal it will try to acquire an IFB signal on a channel that is 2MHz higher than its current RX frequency. For example: set the IFB to receive on 2.403GHz and set up two IFB transmitters (far apart from each other) one at 2.403GHz and one at 2.405 GHz. The IFB receiver(s) will switch from one channel to the other if the IFB signal degrades. This feature dramatically increases the IFB range when using two or more IFB transmitters.

Added Safe Boot Mode feature. If the unit crashes after boot (and the battery is OK), hold the **MENU** and **DEC** keys while powering up. This will turn 'OFF' the IFB. An older unit may crash if IFB and STEREO are both enabled. There is a modification to the power supply board that will fix this.

RX Software History

Software Version # example "076"

last 2 digits are the rom number I.E. 76

prefix code:

0xx – normal receiver (both mono and stereo)

2xx – European channel scheme

Axx – European channels with BATTERY METER ACTIVE

8xx – battery meter active (Lift pin 6 of U14 for this to work!)

Fxx – all menu screens active all the time (debug)

Version rom83 and rom78: 2009-01-21

- Fixed LRSWitch stereo problem (LRSWitch mode is now properly disabled when stereo is turned 'ON')
- Changed inverted LRSWitch bit polarity so it now defaults to 'OFF'

Version rom82: 2009-01-15

- Changed contrast from +50 to +30 (not so dark any more)

Version rom82 and rom77: 2009-01-10

- Added LRSWitch option for handheld (use TRX v5-73)

Version rom81: 2009-01-10

- Added **LRSWitch mode – DO NOT USE WITH STEREO MODE.** When used with TRX version 5-86 and higher, holding a (user selectable) button on the transmitter causes the receiver's audio to move from the left channel to the right channel. This is useful for times when the talent wants to say something private to the sound mixer without the audio being heard by an audience.

Version rom80: 2008-12-04

- Added new LCD module support (this version no longer supports the old LCD)

Version rom76: 2007-08-22

- Changed disable modulation when writing to ROM (to fix timing problem while decoding Stereo)

Version rom75: 2007-08-22

- Added ROM read back check - re-writes if ROM is not correct
- Added extra delay before read back

Version rom74: 2007-08-17

- Added 3rd copy that is only changed in ext menu
- Removed RAPMARMs2 copy

Version rom73: UNKNOWN

- Changed if corrupt block info, default to wide open unit
- Changed re-read ROM if bad chksum on boot
- Changed reset both idcodes if one is bad
- Changed increased factory menu entry key sequence timeout

Version rom71: 2007-07-24

- Added spare ROM copy update mechanism
- Changed now use chksum for real to determine which table to load
- Changed spare copy is updated 10 seconds after 1st copy
- Changed increased delay time from 200 to 300 for UpdateRom calls

Version rom70: 2007-05-09

- Added channel presets to non-EUchannel software
- Changed FREQUENCY SCAN screen to use full MHZ display
- Removed 3 digit Goldline style channel screen

Version rom69: 2007-03-09

- Added TPmode display support from TRX900's

Version rom68: 2007-02-05

- Removed voting option so RxNum 31 is now useful

Version rom67: 2006-11-31

- Added R0_ERR display in init_sci_rs485

Version rom66: 2006-11-27

- Added tuner read back error display in init_tuner

Version rom64: 2006-09-11

- Added RS485 support for RX4900's

Version rom62: 2006-07-24

- Changed moved TONE screen to main menu

=====

Version rom061: 2006-05-09

Added Security mode option (random IDCODES on boot)

=====

Version rom060: 2005-05-16

Changed increased contrast setting to \$8f (was \$84)

=====

Version rom059: 2004-12-20

Added battery ADC routines (version 859)

=====

Version rom058: 2004-06-14

Added re-added power save mode

Changed slowed down DSP during power saver

Added power saver menu in debug screens

=====

Version rom057: 2004-05-20

Added more VCO feedback loop gain and limited symbol offset in vco to +/-3 symbols

=====

Version rom056: 2004-05-07

Fixed jumpsync pointer

=====

Version rom055: 2004-04-26

Added FREQUENCY SCAN screen (see disp.asm)

Changed limited VCO some more during no TX condition

=====

Version rom054: 2004-04-13

Added wait for LRCLK to prevent 1 sample stereo offset

Fixed EU mode freq band (freq channels now start at 838Mhz)

=====

Version rom053: 2004-03-19

Added VCO limiting during no TX condition

=====

Version rom052: 2004-03-19

Removed power save

=====

Version rom051: 2004-03-15

Added menu function for Backlight

=====

Chapter 12 – Menu Sheets

Menu Sheet for TRX9xx

MENU SETTINGS

Standard Menu

- i. (Pacifier page)
(Displays: transmit frequency, remaining battery capacity, available recording time, IFB receive indicator, recording mode, audio input level, recording buffer overrun and current power mode.)
- ii. **GAIN:** _____ (Audio Gain page)
(0 to 52 dB, step 2)
- iii. **TXFREQ:** _____ (Audio Transmitter Frequency page)
(518 to 872 MHz, 30 MHz block, step: 100 KHz) **Minimum channel separation: 500KHz**
- iv. (Transport Control page)
While in RECORD mode, press **DEC** to STOP recording. While in STOP, press **DEC** to move the playback pointer backward. To PLAY, press **INC**. While in PLAY, press **INC** to move the playback pointer forward.
- v. **TIMECODE:** _____ (Timecode Frame-rate page)
([23.98] / [24] / [25] / [29.97NDF] / [29.97DF] / [30NDF] / [30DF])
- vi. **IFB EARPIECE:** _____ (Earpiece Source page)
([REC/PLAY] / [IFB RX AUDIO] / [IFB MIX ALL])
- vii. **LOCK** (Lock page)
(5 sec countdown once entered)
(To unlock, simultaneously press **MENU** & **UP** keys)

Extended Menu – to reach these, turn ‘OFF’ the TX and hold the **MENU** key down while powering up.
(Displays EXTENDED MENU PRESS UP TO EXIT)

- i. **HIGH PASS:** _____ (Highpass Filter page)
([OFF] / [Valid range: 30 to 220Hz, Value step: 10])
- ii. **LIMITER:** _____ (Limiter page)
([OFF] \ [ON])
- iii. **TX FORMAT:** _____ (Audio Transmission Format page)
([US MONO] \ [EUROPEAN] \ [STEREO] \ [US MONO-R])
- iv. **IFB FORMAT:** _____ (IFB Format page)
([LOW Q] / [HIGH Q])
- v. **RXMODE:** _____ (IFB Enable page)
([OFF] / [RX])

- vi. **IFB VOTING:** _____ (IFB Voting Enable page)
([NORMAL (OFF)] / [2 TXERS (ON)])
- vii. **IFB FREQ:** _____ (IFB Frequency page)
(Valid range: 2.403 to 2.475 GHz, Value step: .001)
- viii. **POWER UP MODE:** _____ (Power-up Mode page)
([UNLOCKED] / [LOCKED])
- ix. **PRESS UP KEY 5X** (Media Erase & Format page)
- x. **TC JAM MODE:** _____ (Timecode Jam Mode page)
([MANUAL (OFF)] / [AUTO-JAM] / [AUTO-LOAD])
- xi. **TC SOURCE:** _____ (Timecode Source page)
([AUDIO INPUT] / [IFB (RF)] / [SIDE CONNECTOR])
- xii. **TIMECODE OUTPUT:** _____ (Timecode Output Enable page)
([OFF] / [ON: OUTLEFT] / [ON: OUTRIGHT])
- xiii. **REMOTE CONTROL GROUP ID:** _____ (Remote Control Group ID page)
(Valid range: 0 to 99, Value step: 1)
- xiv. **REMOTE CONTROL UNIT ID:** _____ (Remote Control Unit ID page)
([ALL] / [Valid range: 1 to 200, Value step: 1])
- xv. **EXPANDER** (Expander page)

PARMS: ([OFF] / [ON])

Factory Setting
OFF

RATIO: _____
(Valid range: 1:1.01 to 1:4.00, Value step: .01)

1:1.30

THRESH: _____
(Valid range: 0 to -96 dB, Value step: 1)

-40 dB

REDUCE: _____
(Valid range: 0 to -36 dB, Value step: 1)

-6 dB

SPEED: ([SLOW] / [NORMAL] / [FAST])

SLOW

- xvi. **DYNAMICS** (Dynamics page)

PARMS: ([OFF] / [ON])

Factory Setting
OFF

SIDECHAIN: ([IN] / [LP1] / [LP2] / [HFB])

IN

SPEED: ([SLOWEST] / [SLOW] / [NORMAL] / [FAST] / [FASTEST])

SLOW

ATTACK: ([SLOWEST] / [SLOW] / [NORMAL] / [FAST] / [FASTEST]) **SLOW**

CMP RATIO: _____
(Valid range: 1.0:1 to 5.0:1, Value step: .1) **3.0:1**

CMP THRESH: _____
(Valid range: 0 to -96 dB, Value step: 1) **-20dB**

CMP KNEE: _____
(Valid range: 0 to 20 dB, Value step: 1) **0dB**

EXP RATIO: _____
(Valid range: 1:1.00 to 1:4.00, Value step: .01) **1:1.10**

EXP THRESH: _____
(Valid range: 0 to -96 dB, Value step: 1) **-40dB**

REDUCE: _____
(Valid range: 0 to -36 dB, Value step: 1) **-12dB**

GAIN: _____
(Valid range: 0 to 30 dB, Value step: 1) **0dB**

xvii. **ADC:** _____ (ADC Location page)
([INTERNAL] / [STA-100] / [STA-150])

xviii. **BATTERY TYPE:** _____ (Battery Type page)
([LITHIUM] / [ALKALINE] / [NIMH])

xix. **RECORD MODE:** _____ (Recording Mode page)
([LOOP RECORD] / [NON-LOOP RECORD])

xx. **TX POWER:** _____ (Audio Transmitter Power page)
([10MW] / [25MW] / [50MW] / [100MW])

xxi. **BOOT UP IN:** _____ (Boot Up Mode page)
([NORMAL] / [STANDBY])

xxii. **MUTE SWITCH:** _____ (Mute Switch Enable page)
([0 - DISABLED] / [1 – ENABLED POSITIVE] / [0 – ENABLED NEGATIVE])

xxiii. **LR SWITCH MODE:** _____ (Left/Right Key Assignment page)
([OFF] / [ON: UP KEY] / [ON: MENU KEY] / [ON: DOWN KEY] / [(ALL KEYS)])

xxiv. **NAME:** _____ (Track Name page)
(max: 8 chars, char = 0 to 9, space, A to Z)

- xxv. **ID1:** _____ **ID0:** _____ (Security Code page)
(Valid range: 000 to FFF, Value step: 1, unless necessary, use 000)

RECORDING TO THE MINISD CARD

i. Format the card:

- 1) With the power 'OFF', insert the card into the slot
- 2) Hold the **MENU** key while powering up
- 3) Once up, release the **MENU** key
- 4) Press the **MENU** key repeatedly until **PRESS UP KEY 5X** appears
- 5) Press the **UP** key 5 times to erase and format the card
- 6) The display indicates it progress
- 7) Wait for successful completion before using. If it fails, do not use it to record in the TRX900

ii. Record to the card:

- 1) Turn 'OFF' the transmitter
- 2) Insert the MiniSD card
- 3) Turn 'ON' the transmitter
(The unit will go into Record mode after the initialization process has completed)

INSTALLING A NEW OPERATING SYSTEM

- i. Copy the program to a MiniSD card.
- ii. Insert the card into the media slot.
- iii. Simultaneously press the **UP & DOWN** keys while powering up the unit.
- iv. Unit displays "BurningROM". Process takes 20 seconds.
- v. Once "Done" is displayed, cycle the power to run on the new version.

SAFE BOOT MODE

Simultaneously press the **MENU** and **DOWN** keys while powering up.

Menu Sheet for TRX700 / TRX800

MENU SETTINGS

Standard Menu

- i. (Pacifier page)
(Displays: transmit frequency, remaining battery capacity, available recording time, recording mode, audio input level and recording buffer overrun.)
- ii. **GAIN:** _____ (Audio Gain page)
(0 to 52 dB, step 2)
- iii. **TXFREQ:** _____ (Audio Transmitter Frequency page)
(518 to 872 MHz, 30 MHz block, step: 100 KHz) **Minimum channel separation: 500KHz**
- iv. (Transport Control page)
While in RECORD mode, press **DEC** to STOP recording. While in STOP, press **DEC** to move the playback pointer backward. To PLAY, press **INC**. While in PLAY, press **INC** to move the playback pointer forward.
- v. **TIMECODE:** _____ (Timecode Frame-rate page)
([23.98] / [24] / [25] / [29.97NDF] / [29.97DF] / [30NDF] / [30DF])
- vi. **LOCK** (Lock page)
(5 sec countdown once entered)
(To unlock, simultaneously press **MENU** & **UP** keys)

Extended Menu – to reach these, turn ‘OFF’ the TX and hold the **MENU** key down while powering up.
(Displays EXTENDED MENU PRESS UP TO EXIT)

- i. **HIGH PASS:** _____ (Highpass Filter page)
([OFF] / [Valid range: 30 to 220Hz, Value step: 10])
- ii. **LIMITER:** _____ (Limiter page)
([OFF] \ [ON])
- iii. **TX FORMAT:** _____ (Audio Transmission Format page)
([US MONO] \ [EUROPEAN] \ [STEREO] \ [US MONO-R])
- iv. **POWER UP MODE:** _____ (Power-up Mode page)
([UNLOCKED] / [LOCKED])
- v. **PRESS UP KEY 5X** (Media Erase & Format page)

vi. **EXPANDER** (Expander page)**PARMS:** ([OFF] / [ON])**Factory Setting**
OFF**RATIO:** _____

(Valid range: 1:1.01 to 1:4.00, Value step: .01)

1:1.30**THRESH:** _____

(Valid range: 0 to -96 dB, Value step: 1)

-40 dB**REDUCE:** _____

(Valid range: 0 to -36 dB, Value step: 1)

-6 dB**SPEED:** ([SLOW] / [NORMAL] / [FAST])**SLOW**vii. **DYNAMICS** (Dynamics page)**PARMS:** ([OFF] / [ON])**Factory Setting**
OFF**SIDECHAIN:** ([IN] / [LP1] / [LP2] / [HFB])**IN****SPEED:** ([SLOWEST] / [SLOW] / [NORMAL] / [FAST] / [FASTEST])**SLOW****ATTACK:** ([SLOWEST] / [SLOW] / [NORMAL] / [FAST] / [FASTEST])**SLOW****CMP RATIO:** _____

(Valid range: 1.0:1 to 5.0:1, Value step: .1)

3.0:1**CMP THRESH:** _____

(Valid range: 0 to -96 dB, Value step: 1)

-20dB**CMP KNEE:** _____

(Valid range: 0 to 20 dB, Value step: 1)

0dB**EXP RATIO:** _____

(Valid range: 1:1.00 to 1:4.00, Value step: .01)

1:1.10**EXP THRESH:** _____

(Valid range: 0 to -96 dB, Value step: 1)

-40dB**REDUCE:** _____

(Valid range: 0 to -36 dB, Value step: 1)

-12dB**GAIN:** _____

(Valid range: 0 to 30 dB, Value step: 1)

0dBviii. **BATTERY TYPE:** _____ (Battery Type page)
([LITHIUM] / [ALKALINE] / [NIMH])

- ix. **RECORD MODE:** _____ (Recording Mode page)
([LOOP RECORD] / [NON-LOOP RECORD])
- x. **TX POWER:** _____ (Audio Transmitter Power page)
([10MW] / [25MW] / [50MW] / [100MW])
- xi. **BOOT UP IN:** _____ (Boot Up Mode page)
([NORMAL] / [STANDBY])
- xii. **MUTE SWITCH:** _____ (Mute Switch Enable page)
([0 - DISABLED] / [1 – ENABLED POSITIVE] / [0 – ENABLED NEGATIVE])
- xxvi. **LR SWITCH MODE:** _____ (Left/Right Key Assignment page)
([OFF] / [ON: UP KEY] / [ON: MENU KEY]/ [ON: DOWN KEY]/ [(ALL KEYS)])
- xiii. **NAME:** _____ (Track Name page)
(max: 8 chars, char = 0 to 9, space, A to Z)
- xiv. **ID1:** _____ **ID0:** _____ (Security Code page)
(Valid range: 000 to FFF, Value step: 1, unless necessary, use 000)

RECORDING TO THE MINISD CARD

i. Format the card:

- 1) With the power 'OFF', insert the card into the slot
- 2) Hold the **MENU** key while powering up
- 3) Once up, release the **MENU** key
- 4) Press the **MENU** key repeatedly until **PRESS UP KEY 5X** appears
- 5) Press the **UP** key 5 times to erase and format the card
- 6) The display indicates it progress
- 7) Wait for successful completion before using. If it fails, do not use it to record in the TRX900

ii. Record to the card:

- 1) Turn 'OFF' the transmitter
- 2) Insert the MiniSD card
- 3) Turn 'ON' the transmitter
(The unit will go into Record mode after the initialization process has completed)

INSTALLING A NEW OPERATING SYSTEM

- i. Copy the program to a MiniSD card.
- ii. Insert the card into the media slot.
- iii. Simultaneously press the **UP & DOWN** keys while powering up the unit.
- iv. Unit displays "BurningROM". Process takes 20 seconds.
- v. Once "Done" is displayed, cycle the power to run on the new version.

Menu Sheet for RX900 (M/S) & RX4900

MENU SETTINGS

Standard Menu

- i. (Pacifier page)
(Displays: antenna being used, signal strength, audio level, transmitter limiter status, receiver reception format, receiver battery capacity, transmitter recorder status and transmitter battery capacity.)
- ii. **c123.4 ■ ■**: _____ (Audio Receiver Frequency Select page)
(Valid range 30 MHz in 518 to 872 MHz, Value step: 100 KHz)
- iii. **Scan1234**: _____ (Audio Receiver Frequency Scan page)
Start a Scan: Press the **UP** key
Accept the Frequency: Press the **DOWN** key
Discard the Frequency: Press the **MENU** key
- iv. **Tone**: _____ (Test Tone page)
[Off] / [0dB] / [+20]

Extended Menu – to reach these, turn ‘OFF’ the RX, then hold the **MENU** key down while powering up

- i. **Lite**: _____ (Backlight ON/OFF page)
([Off] / [On])
- ii. **Psave**: _____ (Power Saver Enable page)
([Off] / [On])
- iii. **Form**: _____ (Audio Reception Format page)
([0=US] / [1=EU] / [2=ST])
- iv. **ID0**: _____ (Security Code Part 0 page)
(Valid range: 000 to FFF, Value step: 1, unless necessary, use 000)
- v. **ID1**: _____ (Security Code Part 1 page)
(Valid range: 000 to FFF, Value step: 1, unless necessary, use 000)
- vi. **RxNum**: _____ (RS-485 Unit Identifier page)
(Valid range: 0 to 99, Value step: 1)
- vii. **Baud**: _____ (RS-485 Communication Speed page)
([192] / [384])
- viii. **LRSW**: _____ (Left/Right Switch page)
([On] / [Off])

- ix. **p# nnn.n:** _____ (Preset Frequency pages {# = 0 to 9})
(Valid range 30 MHz in 518 to 872 MHz, Value step: 100 KHz)

Test Menu – to reach these, turn ‘OFF’ the RX, then hold the INC & DEC keys down while powering up

- i. **Secure:** _____ (Security Enable page)
([Off] / [On])
- ii. **a00 b00:** (Antenna Signal Strength page)
- iii. **vco:** (VCO page)
- iv. **Ea000000** (Reception Error Counters page)
- v. **s77 ■■ v00** (Signal Reception Quality page)

Menu Sheet for IFB100

MENU SETTINGS

Standard Menu

- i. (Pacifier page)
(Displays: transmitter frequency, DC power level, audio level meter and remote transport control status.)
- ii. **REMOTE GAIN:** _____ (Remote Audio Gain Change page)
(UP increases gain, DOWN decreases gain)
- iii. **REMOTE CONTROL UNIT ID:** _____ (Remote Unit ID page)
([ALL] / [Valid range: 0 to 200, Value step: 1])
- iv. **REMOTE CH:** _____ (Remote Audio Frequency Change page)
(Valid range: 512.0 to 752.0 MHz, Value step: .1)
- v. **REMOTE POWERMODE:** _____ (Remote Power Setting Change page)
([0: POWER=ON] / [1: POWER=ON] / [2: POWER=ON] / [3: POWER=ON]
/ [4: POWER=ON] / [5: POWER=LOW1] / [6: POWER=LOW2])
- vi. **TIMECODE:** _____ (Timecode Frame-rate page)
([23.98] / [24] / [25] / [29.97 NDF] / [29.97 DF] / [30 NDF] / [30 DF])
- vii. **IFB FREQ:** _____ (IFB Frequency page)
(Valid range: 2.403 to 2.475 GHz, Value step: .001)
- viii. **IFB INPUT MIX:** _____ (IFB Input Mix page)
([LR MONO MIX] / [LEFT ONLY] / [RIGHT ONLY])
- ix. **LOCK** (Lock page)
(5 sec countdown once entered)
(To unlock, simultaneously press **MENU** & **UP** keys)

Extended Menu – to reach these, turn ‘OFF’ the RX and hold the **MENU** key down while powering up
(Displays EXTENDED MENU PRESS UP TO EXIT)

- i. **HIGH PASS:** _____ (High Pass Filter page)
([Off] / [Valid range: 30 to 220 Hz, Value step: 10])
- ii. **LIMITER:** _____ (Limiter page)
([OFF] / [ON])
- iii. **IFB FORMAT:** _____ (IFB Format page)
([LOW Q] / [HIGH Q])
- iv. **IFB FREQ:** _____ (IFB Frequency page)
(Valid range: 2.403 to 2.475 GHz, Value step: .001)

- v. **POWER UP MODE:** _____ (Power-up Mode page)
([Unlocked] / [Locked])
(Unlock by simultaneously pressing the **MENU** and **UP** keys)
- vi. **TC JAM MODE:** _____ (Timecode Jam Mode page)
([MANUAL (OFF)] / [AUTO-JAM] / [AUTO-LOAD])
- vii. **TC SOURCE:** _____ (Timecode Source page)
([AUDIO INPUT] / [IFB (RF)] / [SIDE CONNECTOR])
- viii. **TIMECODE OUTPUT:** _____ (Timecode Output Enable page)
([OFF] / [ON: OUTLEFT] / [ON: OUTRIGHT])
- ix. **REMOTE CONTROL GROUP ID:** _____ (Remote Control Group ID page)
(Valid range: 0 to 99, Value step: 1)
- x. **REMOTE CONTROL UNIT ID:** _____ (Remote Control Unit ID page)
([ALL] / [Valid range: 001 to 200, Value step: 1])
- xi. **IFB TX POWER:** _____ (IFB Transmitter Power page)
(Valid range: 0 to 7, Value step: 1)
- xii. **TVCHAN MIN:** _____ (TV Channel Minimum page)
[Valid range: 16 to 99, Value step: 1]
- xiii. **TVCHAN MAX:** _____ (TV Channel Maximum page)
[Valid range: 16 to 99, Value step: 1]

INSTALLING A NEW OPERATING SYSTEM

- i. Copy the program to a MiniSD card.
- ii. Insert the card into the media slot.
- iii. Simultaneously press the **UP & DOWN** keys.
- iv. Unit displays "BurningROM". Process takes 20 seconds.
- v. Power down and back up to run new version.

Chapter 13 – Digital Wireless System Quickstart

Common Settings for Associated Transmitters, Receivers and IFB

The following table identifies settings that must agree, to allow the associated AUDIO transmitters and receivers to work together:

AUDIO Transmitter side	AUDIO Receiver side
Standard Menu Audio Transmitter Frequency page {p.27}	Standard Menu Audio Receiver Frequency Select page {p.52}
Extended Menu Audio Transmission Format page {p.31} Security Code page {p.38}	Extended Menu Audio Reception Format page {p.54} Security Code Part 0 page {p.55} Security Code Part 1 page {p.55}

Table 13-1 Audio Settings that must be Consistent

The following table identifies settings that must agree, to allow the associated IFB transmitter and receivers to work together:

IFB Receiver side	IFB Transmitter side
Extended Menu IFB Format page {p.31} IFB Enable page {p.31} Remote Control Group ID page {p.34}	Extended Menu IFB Format page {p.63} Remote Control Group ID page {p.65}
Remote Control Unit ID page {p.34} IFB Frequency page {p.32}	Standard Menu Remote Unit ID page {p.60} IFB Frequency page {p.62}

Table 13-2 IFB Settings that must be Consistent

NOTE: It should go without saying, for these units to function together, the same or compatible software versions must have been installed in all of the units.

Using Your Wireless Transmitters and Receivers

Receiver Related Preparation

Scan for an Open Frequency

Scan5722

Scan5600

Scan5693

1. Press the **MENU** key until Scan appears.
2. Press the **INC** key to start the scanning process.
3. Press the **DEC** key when the scan stops, to set the open frequency.

IMPORTANT: The **SAME** frequency must be set in both the receiver and its associated transmitter.

Set the Signal Format

C569.3 ■■

1. Press the **MENU** key while turning the receiver power 'ON' to enter the Extended Menu.

Form0=US

2. Press the **MENU** key until the Reception Format Menu appears.

Form2=ST

3. Press the **INC** or **DEC** key until the proper format appears. See the transmitter's format selection for the proper setting to be used here.

IMPORTANT:

- After changing the signal format, you must cycle the power before the change becomes active.
- Both the transmitter and receiver, **FOR THE SAME LINK**, must use the **SAME FORMAT**.

Enter the Encryption Code

If encryption is not required, leave all units set to "000". Do not use the codes in the following example.

C569.3 ■■

1. Press the **MENU** key while turning the receiver power 'ON' to enter the extended menu.

ID0=000

2. Press the **MENU** key until the ID Code Part 0 Menu appears.

ID0=012

3. Press the **INC** or **DEC** key to set this part of the desired combination.

ID1=000

4. Press the **MENU** key until the ID Code Part 1 Menu appears.

ID1=272

5. Press the **INC** or **DEC** key to set this part of the desired combination.

IMPORTANT: Both the receiver and transmitter codes, **FOR THE SAME LINK MUST MATCH**, or the signal can not be decoded.

Transmitter Related Preparation**Power Switch****Only when the TRX900 & STAxXX Stereo Adapter are combined**

Power Switch 'ON' TRX900 operates on internal battery.

Power Switch 'OFF' TRX900 operates on power provided by the STAxXX's external power connector.

All other transmitters and TRX900 w/o STAxXX

Power Switch 'ON' Unit operates on internal battery.

Power Switch 'OFF' Unit is 'OFF'.

Enter the Audio Transmitter FrequencyTXFREQ 581.6
■ ■

1. Press the **MENU** key until the Frequency page appears.

TXFREQ 569.3
■ ■

2. Press the **INC** or **DEC** key to enter the associated receiver's frequency.

Set the Signal Format (TRX900 w/ STAxxx)

EXTENDED MENU
PRESS UP TO EXIT

TX FORMAT:
US MONO

(REBOOT)
STEREO

1. Press the **MENU** key while turning 'ON' the unit, to enter the Extended Menu.

2. Press the **MENU** key until the Transmit Format page appears.

3. Press the **INC** or **DEC** key until it displays the appropriate value.

IMPORTANT:

- "STEREO" will only be used when a TRX900 (/AA) has an STAxxx attached.
- After changing the signal format, you must cycle the power before the change becomes active.
- Both the transmitter and receiver, **FOR THE SAME LINK**, must be set to the **SAME FORMAT**.

Set Where Analog to Digital Conversion is to be Performed

ADC: INTERNAL



1. Press the **MENU** key until the ADC page appears.

ADC: STA-150



2. Press the **INC** or **DEC** key until it displays the appropriate value.

NOTES:

- Use "STA-150" with the TRX900 (/AA) w/ STA150 in stereo mode. (TA-5F)
- Use "STA-100" with the TRX900 (/AA) w/ STA100 in stereo mode. (TA-5F)
- Use "INTERNAL" with the TRX900 (/AA) in mono mode. (micro-LEMO 3-pin mic input)
- Use "INTERNAL" with all other units.

Set the Transmit Power (May 2008 and later models)

TX POWER: 10MW

1. Press the **MENU** key until the Transmit Power page appears.

TX POWER: 50MW

2. Press the **INC** or **DEC** key to raise or lower the Transmit Power.

NOTE: If this page does not appear, your transmitter is not equipped with this option.

Enter the Encryption Code

If encryption is not required, leave all units set to "000".

ID1:000 ID0:000



1. Press the **MENU** key until the Security Code page appears.

ID1:000 ID0:002



2. Press the **INC** or **DEC** key to change the current character position.

ID1:000 ID0:002



3. Press the **MENU** key to move to the next character position.

IMPORTANT: Both the receiver and transmitter codes **MUST MATCH**, or the signal can not be decoded.

Remotely Controlling the Transmitters and Sending IFB Audio

IFB100 Related Preparation

Enter the IFB Frequency for Your Group

2.403 ----

|

IFB FREQ: 2.403

IFB FREQ: 2.415

1. Press the **MENU** key until the IFB Transmitter Frequency page appears.
2. Press the **INC** or **DEC** key to change the frequency.

Identify the Audio Source(s) for the IFB transmitter

IFB INPUT MIX:
LR MONO MIX

IFB INPUT MIX:
LEFT ONLY

1. Press the **MENU** key until the IFB Input Mix page appears.
2. Press the **INC** or **DEC** key until the appropriate choice appears.
3. Attach a cable from your Line-level source(s) to your IFB100's Audio-In connector.

Enter a Unique Group ID for Your Gear

EXTENDED MENU
PRESS UP TO EXIT

REMOTE CONTROL
GROUP ID=0

REMOTE CONTROL
GROUP ID=15

1. Press the **MENU** key while turning 'ON' the unit, to enter the Extended Menu.
2. Press the **MENU** key until the Remote Control Group ID page appears.
3. Press the **INC** or **DEC** key to change the Group number.

Send Timecode from the TC Source to each Transmitter

TC SOURCE:
AUDIO INPUT

TC SOURCE:
SIDE CONNECTOR

1. Press the **MENU** key until the Timecode Source page appears.
2. Press the **INC** key until "Side Connector" appears.
3. Attach a cable from your recorder's TC output to your IFB100's TC-in connector.

Set the IFB Format for Your Group

IFB FORMAT:
HIGH Q

IFB FORMAT:
LOW Q

1. Press the **MENU** key until the IFB Format page appears.
2. Press the **DEC** key to change to LOW Q.

IMPORTANT: Both the transmitter and **ALL** receivers must be set to the **SAME FORMAT**.

Cycle the IFB100's Power

TRX9xx Related Preparations**Set the IFB Format**

EXTENDED MENU
PRESS UP TO EXIT

1. Press the **MENU** key while turning 'ON' the unit, to enter the Extended Menu.

IFB FORMAT:
HIGH Q

2. Press the **MENU** key until the IFB Format page appears.

IFB FORMAT:
LOW Q

3. Press the **DEC** key to change to "LOW Q".

IMPORTANT: Both the transmitter and **ALL** receivers must be set to the **SAME FORMAT**.

Enable the IFB Receiver

RXMODE=OFF
RXED BLOCKS 000

1. Press the **MENU** key until the IFB Receiver Enable page appears.

RXMODE=RX
RXED BLOCKS 000

2. Press the **INC** key to change to "RX".

Enter Your Gear's Group ID

REMOTE CONTROL
GROUP ID=0

1. Press the **MENU** key until the Remote Control Group ID page appears.

REMOTE CONTROL
GROUP ID=15

2. Press the **INC** or **DEC** key to change the Group number to the number you assigned to the IFB100 on page 109.

Assign a Unique Unit ID

REMOTE CONTROL
UNIT ID=001

1. Press the **MENU** key until the Remote Control Unit ID page appears.

REMOTE CONTROL
UNIT ID=005

2. Press the **INC** or **DEC** key to change the Unit number to the appropriate number.

Enter Your Group's IFB Frequency


IFB FREQ: 2.403

1. Press the **MENU** key until the IFB Receiver Frequency page appears.

IFB FREQ: 2.415

2. Press the **INC** or **DEC** key to change the frequency to the frequency you assigned to the IFB100 on page 109.

Enter the IFB Earpiece Source (Optional)

569.3 ??H STOP


1. Attach the EA100 to the unit.

IFB EARPIECE:
REC/PLAY

2. Press the **MENU** key until the IFB Earpiece Source page appears.

IFB EARPIECE:
IFB RX AUDIO

3. Press the **DEC** key to change to "IFB RX Audio".

Cycle the Power of Your Transmitter

Chapter 14 – Zaxcom Warranty Policy and Limitations

Zaxcom Inc. values your business and always attempts to provide you with the very best service.

No limited warranty is provided by Zaxcom unless your Zaxcom Digital Wireless System Component ("Product") was purchased from an authorized distributor or authorized reseller. Distributors may sell Product to resellers who then sell Product to end users. Please see below for warranty information or obtaining service. No warranty service is provided unless the Product is returned to Zaxcom Inc. or a Zaxcom dealer in the region where the Product was first shipped by Zaxcom.

Warranty Policy

Zaxcom Product carries a Standard Warranty Period of one (1) year.

NOTE: The warranty period commences from the date of delivery from the Zaxcom dealer or reseller to the end user.

There are no warranties which extend beyond the face of the Zaxcom limited warranty. Zaxcom disclaims all other warranties, express or implied, regarding the Product, including any implied warranties of merchantability, fitness for a particular purpose or non-infringement. In the United States, some laws do not allow the exclusion of the implied warranties.

Return Material Authorization (RMA)

No Product may be returned directly to Zaxcom without first contacting Zaxcom for a Return Material Authorization ("RMA") number. If it is determined that the Product may be defective, you will be given an RMA number and instructions for Product return. An unauthorized return, i.e. one for which an RMA number has not been issued, will be returned to you at your expense. Authorized returns are to be shipped prepaid and insured to the address on the RMA in an approved shipping container. Your original box and packaging materials should be kept for storing or shipping your Product. To request an RMA, please contact Zaxcom by telephone. There is an RMA form on the Zaxcom website. Please fill out the form and return it with the Product for repair. Zaxcom will return the warranty repair via 2nd day UPS or FedEx at their discretion. If overnight service is required, a FedEx or UPS account number must be provided to Zaxcom to cover the shipping expenses.

Warranty Limitations

Zaxcom's limited warranty provides that, subject to the following limitations, each Product will be free from defects in material and workmanship and will conform to Zaxcom's specification for the particular Product.

Limitation of Remedies

Your exclusive remedy for any defective Product is limited to the repair or replacement of the defective Product.

Zaxcom may elect which remedy or combination of remedies to provide in its sole discretion. Zaxcom shall have a reasonable time after determining that a defective Product exists to repair or replace a defective Product. Zaxcom's replacement Product under its limited warranty will be manufactured from new and serviceable used parts. Zaxcom's warranty applies to repaired or replaced Product for the balance of the applicable period of the original warranty or thirty days from the date of shipment of a repaired or replaced Product, whichever is longer.

Limitation of Damages

Zaxcom's entire liability for any defective Product shall, in no event, exceed the purchase price for the defective Product. This limitation applies even if Zaxcom cannot or does not repair or replace any defective Product and your exclusive remedy fails of its essential purpose.

No Consequential or Other Damages

Zaxcom has no liability for general, consequential, incidental or special damages. These include loss of recorded data, the cost of recovery of lost data, lost profits and the cost of the installation or removal of any Product, the installation of replacement Product, and any inspection, testing or redesign caused by any defect or by the repair or replacement of Product arising from a defect in any Product.

In the United States, some states do not allow exclusion or limitation of incidental or consequential damages, so the limitations above may not apply to you. This warranty gives you specific legal rights and you may also have other rights, which vary from state to state.

Your Use of the Product

Zaxcom will have no liability for any Product returned if Zaxcom determines that:

- The Product was stolen.
- The asserted defect:
 1. Is not present,
 2. Cannot reasonably be fixed because of damage occurring when the Product is in the possession of someone other than Zaxcom, or
 3. Is attributable to misuse, improper installation, alteration, including removing or obliterating labels and opening or removing external covers (unless authorized to do so by Zaxcom or an authorized Service Center), accident or mishandling while in the possession of someone other than Zaxcom.
- The Product was not sold to you as new.

Additional Limitations on Warranty

Zaxcom's warranty does not cover Product, which has been received improperly packaged, altered or physically abused.